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AIR FORCE

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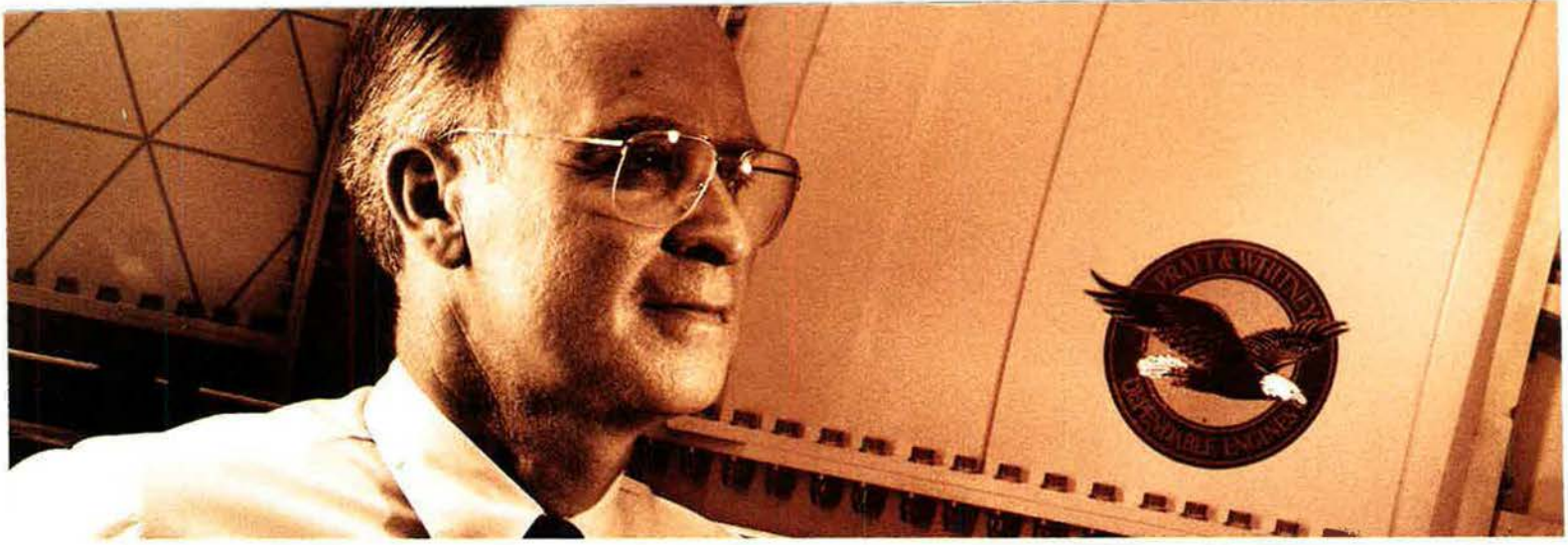
On Top at William Tell



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January 1995, Vol. 78, No. 1

AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

About the Cover: An F-15B from the 95th Fighter Squadron, Tyndall AFB, Fla., soars over the Gulf of Mexico en route to judge competition at William Tell 1994. See "On Top at William Tell," p. 40. Staff photo by Guy Aceto.

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Editorial

By John T. Correll, Editor in Chief

Suddenly, a New Partnership

House Republicans have a major piece of defense legislation all drafted and ready to drop into the hopper this month when the new Congress convenes. In it they call on their colleagues to "realistically assess United States military needs and reverse the downward spiral of defense spending." Since coming to power two years ago, they say, the Clinton Administration has introduced defense cuts that will amount to $156 billion by 1999, and these cuts, on top of reductions made previously by the Bush Administration, could leave US forces short of what they need to perform their mission.

The pending House bill is based on a section of the "Contract With America," published in September as a declaration of what voters could expect if the Republicans gained control of Congress in the forthcoming elections. Among other things, they promised that if they won, a "national security restoration act" would be considered during the first 100 days. The election gave the Republicans not only a majority in both the Senate and the House but also leadership of congressional committees. The Armed Services Committees this session will be chaired by two Republicans from South Carolina, Sen. Strom Thurmond and Rep. Floyd D. Spence, who want to roll back some of the Clinton defense cuts.

Administration officials deny that they are changing direction to head off a double envelopment by congressional Republicans, but President Clinton announced on December 1 that he will ask for an additional $25 billion for defense over a six-year period "to ensure military readiness and to give our military and their families the support they deserve." It was promptly noted, however, that sixty percent of the new funding will be delayed until after the turn of the century. Next year's defense budget will still be lower than this year's. The one after that will be even smaller. The Administration admitted in July that the United States cannot cover the declared strategy "with the force structure laid out right now" and acknowledged in November that holes are developing in force readiness posture.

In a letter to the President, Sens. John McCain (R-Ariz.) and John W. Warner (R-Va.), both members of the Armed Services Committee, said, "We urge you to submit to Congress a defense budget request for Fiscal 1996 that maintains budget authority, in real terms, at the level of the Fiscal 1995 budget—and a Future Years Defense Program that is fully funded." It has been a running embarrassment for Mr. Clinton that his defense budget won't pay for the program he proposes, much less a program that would meet the actual requirements.

Confronted by a Republican majority in Congress, the Administration is shifting its position on defense.

The Administration made its critical mistake in March 1993 when it announced sweeping defense cuts before determining what those cuts would mean in reality. Time after time thereafter, the Clinton team has calculated the military requirements only to find that the programmed resources would not cover them. Unwilling to correct the basic mistake, the Administration's method has been to recompute the requirements and to cover some of the holes by moving money around.

Last November, Secretary of Defense William J. Perry announced a "Quality of Life" initiative concentrating on barracks improvements, family housing, and child-care centers. Unfortunately, he said, the only way to pay for it was to take money from other accounts, primarily from force modernization. Estimates of the defense budget shortfall range up to $100 billion or even (in a high shot by the General Accounting Office) $150 billion.

As Deputy Secretary of Defense John M. Deutch explains it, though, matters are now in hand. The shortfall can be expressed either as $40 billion (figured over five years) or $49 billion (six years). The additional $25 billion sought by the Administration will cover about half the gap. The rest will be resolved, in roughly equal parts, (a) by more favorable assumptions about inflation devised by the Congressional Budget Office and (b) by—surprise!—more reductions (about $12 billion worth) in the modernization account.

National defense is a partnership. The President is Commander in Chief. He also submits the defense budget proposal each year. The Constitution, however, charges Congress with the responsibility to raise and support the armed forces. Many of Mr. Clinton's partners in Congress believe that things have gone wrong. Not all of those concerned are Republicans. "I think there would be a bipartisan interest in increasing the defense budget," says Sen. Joseph Lieberman (D-Conn.).

A Washington *Post* editorial also welcomed the "new defense debate," saying that "the right way to do the exercise is to work out from the threats to the necessary forces to the cost. Too often it's done the other way around." Good point.

In the summer of 1993, for example, the review of requirements indicated a force that included twenty-four fighter wings, 184 operational bombers, and a lot of airlift. The arbitrary budget ceiling said otherwise, so the goal was duly marked down to twenty fighter wings and 100 operational bombers. That is no way to structure a defense program.

That is the basic message that Mr. Clinton is getting, or should be getting, from his partners in Congress. Pay attention to the requirements. Make sure they're covered. Anything else does not add up to national security ■

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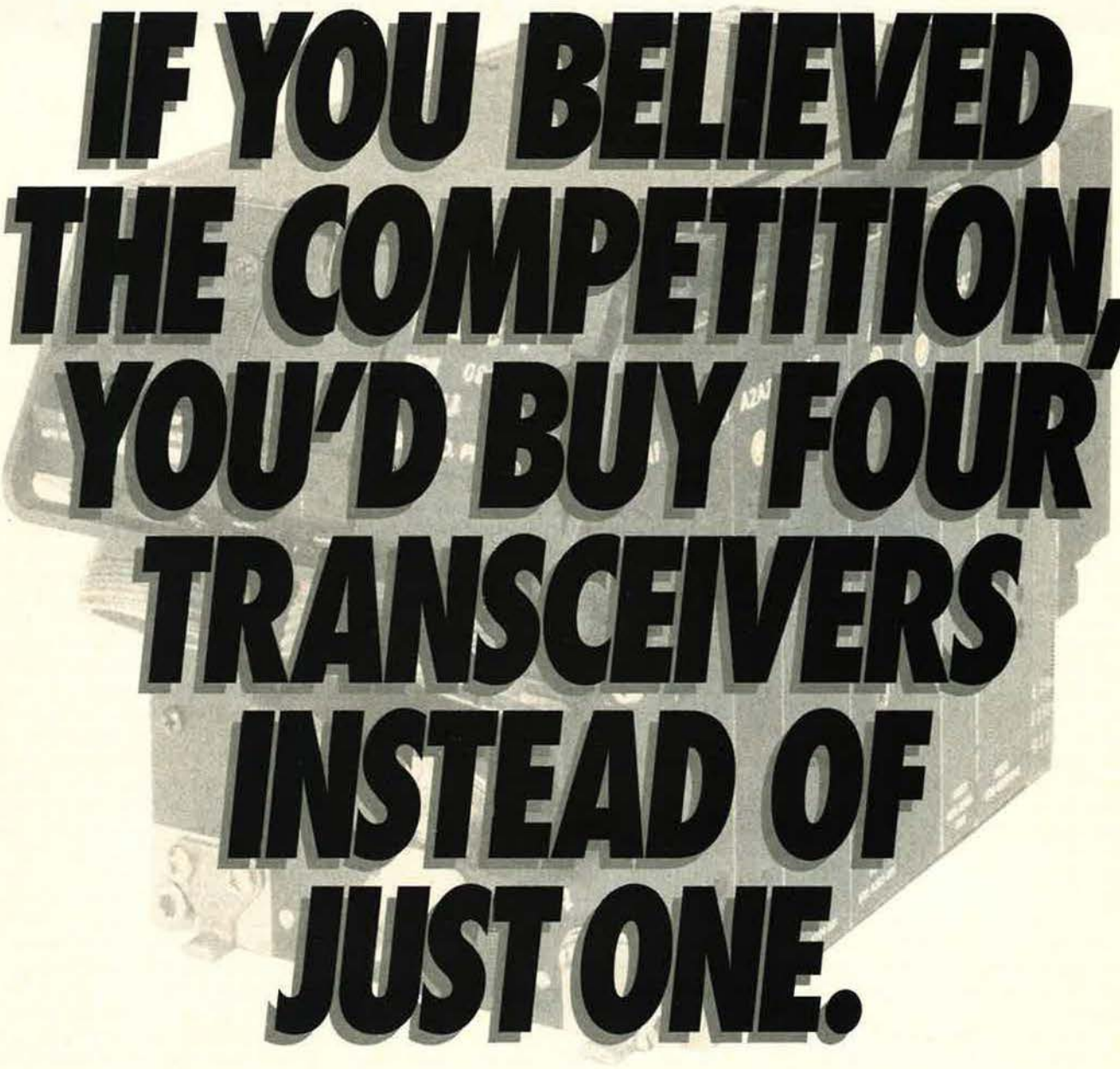

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Letters

Understated Cuts

Peter Grier's "What's Left of the Air Force Program?" *[December 1994, p. 24]* raises critical questions regarding the future of American airpower. I believe, however, that this article understates the problems we face and illustrates the need to view American airpower from a more joint perspective.

I have become increasingly concerned that the summary data on the Clinton force plan understate the true nature of the cuts taking place in American airpower as well as in all aspects of US forces. As a result, I have asked each military service to provide me with a more relevant and accurate set of numbers: the cuts taking place in aircraft strength as distinguished from the cuts taking place in nominal wings.

I have received the numbers from the Army, Navy, Marine Corps, and Air Force, and I feel that it is time the advocates of American airpower were fully informed as to exactly what will happen to our air forces under the Clinton plan.

The bottom line for each service is that combat air strength is being cut far more than the nominal data usually used to measure planned force cuts would indicate.

The cut in active US Army airpower, for example, is sixty-seven percent to seventy-four percent in active fixed-wing aircraft and thirty-nine percent in active attack helicopters. The cut in active primary Navy combat aircraft is forty-seven percent, and the cut in total combat aircraft is forty-two percent. The cut in Marine combat airpower—cuts that are not mentioned in most of the data issued by the Clinton Administration—is seventeen percent for active primary combat aircraft and fifty percent for reserve primary combat aircraft.

The cuts for the Air Force are fifty-four percent for active bombers, forty-four percent for all bombers, fifty-three percent for active fighter/attack aircraft, fifty-one percent for all fighter/attack aircraft, seventy-two percent for active reconnaissance and special-purpose aircraft, and seventy-three percent for all reconnaissance and special-purpose aircraft.

There are also serious cuts for special operations and airlift aircraft. The Air Force informed me that US airlift capabilities are now planned to suffer steady cuts through 2005 and will at best be about ten million ton-miles per day (mtm/d) short of the fifty-two mtm/d necessary to implement a "two near-simultaneous major regional conflict" strategy—even if we assume that no contingency will require more than thirty days of intense airlift and the Air Force will not lose a single strategic lift aircraft to an accident between now and 2010.

The data I have show clearly that substantial risk is inherent in the cuts planned in key types of aircraft, such as the F-15 and F-111.

I recognize that some opponents of a strong defense would argue that we no longer have a peer threat. This is true, but we also face an exceedingly unstable world that taxes—if not overstrains—our current military capability, and one way to ensure that we deter the emergence of any peer threat is to keep America strong.

This is not the time to replace the absent peer threat with an American threat to American airpower. Before we make any further reductions in our capabilities, we need a full debate over the true nature of the force cuts we face. This debate must focus on the detailed numbers and not on nominal cuts that disguise the true nature of what is taking place. Finally, I believe that such a debate will raise serious questions about our ability to meet our strategic commitments if we carry out the level of cuts reflected in the latest data, which show the inevitable result of currently planned cuts in real defense spending.

Sen. John McCain
(R-Ariz.)
Washington, D. C.

Do you have a comment about a current issue? Write to "Letters," AIR FORCE Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Letters should be concise, timely, and preferably typed. We cannot acknowledge receipt of letters. We reserve the right to condense letters as necessary. Unsigned letters are not acceptable. Photographs cannot be used or returned.—THE EDITORS

A Dangerous Dynamic

At the risk of expanding interservice disagreements, I take issue with "The Cannibal Dynamic" *[October 1994, p. 2]*. It is not an unbiased account of the events surrounding the recent Army "attack" on the F-22, hurting rather than helping service relationships. As the editor put it, "It appears that some senior people in the US Army have recently become that desperate [to turn on neighbors for nourishment]. They need money, and they are ready to take a bite out of the Air Force to get it." The editor concludes, "One day you're picking the menu. The next day you're in the pot."

The truth is that the Air Force began raiding the other services' pots first. One of the opening Air Force salvos was aimed at the Navy budget, repeating the events that took place during the post–World War II budget cuts. . . . Competition for defense dollars was tight in the Eisenhower Administration, and interservice competition was intense. Successful Air Force lobbying of the Secretary of Defense led to the infamous "revolt of the admirals," cancellation of the supercarrier, and bitter interservice rivalry.

Four decades later, some Air Force leaders have begun to argue that the B-2 and B-1B bombers could replace the Navy nuclear carrier battle groups in littoral deep-strike and forward-presence roles. Because these long-range planes could operate from the continental US and strike the same targets while providing the same level of deterrence and forward presence, the Navy did not need eleven carrier battle groups. The money saved could be used to fund the B-2.

The next salvo was fired at the Army budget when Air Force leaders

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3rd	**F-16**	CF-18	F-15	F-15	F-15
4th	F-15	F-15	F-15	F-15	**F-16**
5th	F-15	F-15	F-15	CF-18	F-15
6th	F-15	F-15	CF-18	F-15	F-15
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Advertising Director
Patricia Teevan
1501 Lee Highway
Arlington, Va. 22209-1198
Tel: 703/247-5800
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announced their desire to take over the Army medium- and high-altitude air-defense systems and long-range field artillery missile systems, such as the Army Tactical Missile System. This was followed by former Air Force Chief of Staff Gen. Merrill A. McPeak's proposal to define the future battlefield as five separate battles: rear, close, deep, maritime, and space, with a single service responsible for each.

The Air Force would be responsible for the high battle (air-to-air combat and space operations) and the deep battle (sensing, targeting, and interdicting ground targets at ranges greater than fifty kilometers from the front), while the Army would become the single manager of the rear battle (ground operations, consisting of base security and occupation duties behind the front lines) and the close battle (direct land engagements with the enemy out to fifty kilometers from the front).

The Air Force has already offered to turn over its A-10s to the Army to rid itself of the close air support mission that it never fully supported in order to focus on the deep and high battles. From an Army perspective, this proposal seems an obvious Air Force grab for increased roles, missions, and budget dollars, just as it is USAF's perspective that the Army general's proposal to eliminate or stretch out the purchase of the F-22 is a grab for reallocation of dollars to Army programs.

We need to stop this raiding of budgets and resurgent interservice rivalry before it develops any further. Lt. Gen. Jay M. Garner's comment that the Air Force and Navy are "add ons" to the Army is just as out of place in today's joint environment as were Gen. Michael J. Dugan's comments prior to the Persian Gulf War that the Army and Navy would mop up behind the Air Force.

General McPeak's proposed realignment detracts from our ability to conduct joint warfare by returning the Department of Defense to a doctrine of individual services conducting relatively independent campaigns in their respective mediums. . . .

To project effective military power and to defend national security interests, we need the combined contribution of all four services operating within the financial constraints imposed by the Congress. The Secretary of Defense and the Joint Chiefs of Staff need to develop a coherent joint requirements list in order to go before the Congress and defend the list with one voice.

If we allow ourselves to be divided internally, we will not be able to convince the political leadership to acquire the proper balance of force modernization and current operations and maintenance budgets for all four services. As a consequence, our airmen, soldiers, sailors, and Marines will be forced to pay a heavy price when we are required to use that power.

Maj. Scott A. Fedorchak, USA
Lillington, N. C.

Lt. Gen. Jay M. Garner had the courage to speak the truth in his comments about the F-22. The F-22, while an impressive and formidable aircraft, is simply not needed to project power or defend American interests. What the nation truly needs is not being pursued.

While General Garner may have gone to extremes, his central point is correct: Current first-line fighter aircraft can easily defeat any foreseeable adversary for the next fifteen to twenty years. The F-22 was designed to counter an advanced opponent that would have come from Mikoyan or Tupolev. Let's be realistic: Where will the Russians get the money to develop such an aircraft, and even more important, to whom will they sell it?

The countries that are likely to cause trouble in the next two decades do not have the money to buy, operate, and maintain these hypothetical aircraft. They do not have the resources to operate their current inventories properly. How can we expect them to be able to field something even more sophisticated? Look at the track record of the MiG-29 in Germany or India. India and Germany enjoy relatively high median levels of education. Potential adversaries (especially in the Middle East) do not. Do you honestly believe such countries as Iraq could keep these imaginary aircraft at top levels of readiness and proficiency? I do not.

On the other hand, cash-strapped countries with poorly educated populaces (such as Iraq) could easily defend their airspace with advanced surface-to-air missile systems. Such weapons are cheap to buy, require few highly trained personnel, and are relatively inexpensive to operate. A level of periodic maintenance can easily be provided by "advisors."

This scenario is far more likely, yet it has been relegated to the back burner by the Air Force. How easy it is to forget that air superiority comprises both air-to-air and surface-to-

air. A dedicated Suppression of Enemy Air Defenses aircraft is what is needed for true air superiority, yet this role is being farmed out as a secondary mission. The result of this policy will be superior air-to-air fighters downing MiG-21s and Super Galebs while they dodge (or get hit by) SA-10s and SA-12s.

The services are short $40 billion over the next five years in the defense budget, yet the Air Force seems willing to sell its soul—and a lot of mission capability—to get a glamorous airplane that will look good at the Paris Air Show. In your editorial, you wrote disparagingly of the Army, saying: "When an organization gets desperate enough, it is apt to turn on the neighbors for nourishment." Congratulations. The Air Force—in its obsessive quest for the F-22—has done exactly that.

Maj. Bruce Benyshek,
USAF
Nellis AFB, Nev.

Throughput vs. Profit

Kudos to David J. Lynch for his contribution to the present phase of the never-ending airlift debate, "Airlift's Year of Decision" *[November 1994, p. 24].* His assessment of our aircraft options was broad and even-handed—no minor achievement, given the economic stakes and level of political bombast often associated with this issue. Still, for all Mr. Lynch's fairness, his article only reinforces the folly of the nondevelopmental airlift aircraft (NDAA) concept, at least to the extent that it contemplates the purchase of commercial-type aircraft for the military fleet.

The most obvious flaw in the NDAA concept is that commercial and military transport aircraft are designed according to different criteria. Commercial transports are designed to maximize profit on developed route systems. Military transports are designed to maximize the throughput of personnel and materiel at en route facilities (mainly runways, parking areas, and drop zones) markedly less developed than those that would be required by commercial operations of similar capacity. Thus, in relation to military transports, commercial transport designs emphasize long and narrow fuselages, low-mounted wings, and structures built only strong enough to handle reasonable aerodynamic loads.

The measures of merit of military and commercial airlift aircraft and operations are different: throughput vs. profit. Any effort to justify the NDAA relies primarily on cost. Therefore those efforts amount to myopic bean counting. Any useful justification of these aircraft as military airlifters must be done on their ability to get a lot of people and materiel into rotten places in a hurry—*i.e.,* their throughput in the context of established war plans. This requirement for throughput under austere conditions is increasing—not decreasing—in the multipolar confusion of the times.

Given the existence of the Civil Reserve Air Fleet (CRAF) program, buying commercially derived aircraft for the military makes little economic sense. Since 1951, the CRAF and its associated commercial contract program have proven by far the most cost-effective way to provide for the bulk of those peacetime and wartime airlift requirements that can be moved in commercial passenger and cargo aircraft. Why buy aircraft for the military that are already available, or that can be made available, in the CRAF at far less cost?

Also, the C-17 is no longer all that expensive in relation to its alternatives. As Mr. Lynch pointed out, the plane's total program costs are approaching the halfway point. Any responsible policy formulations will treat those costs as sunk, just like the initial development costs of the Boeing 747F or the C-5B. Thus the real policy question is which aircraft, or combination of aircraft, will fill established airlift requirements at the least total program cost, starting from now.

Given its unmatched throughput capacity and maintainability, its impressive range and payload capabilities in relation to other military transports, its accelerating developmental progress, and its future unit cost of around $200 million, the C-17 actually comes out looking pretty good.

Lt. Col. Robert C. Owen,
USAF
Maxwell AFB, Ala.

Doctored History

I am very proud of your efforts to keep the National Air and Space Museum and Martin O. Harwit from rewriting history *["Washington Watch: The Three Doctors and the* Enola Gay,*" November 1994, p. 8].* The *Enola Gay* and her crew did a heroic job and saved thousands of lives. A publicly funded museum should keep history accurate and not attempt to infuse it with political correctness. Mr. Harwit has gone too far this time and should be removed from his position.

I thank you for your vigilance and the crew of the *Enola Gay* for its service.

Brian D. Sovern
Okeana, Ohio

The purpose of the National Air and Space Museum is to display articles of hardware.

The purpose of the Air and Space Museum is not to editorialize (on anything) nor to teach social righteousness.

The Smithsonian has a record of nonobjectivity; a predisposition for engulfing exhibits with unnecessary glitter and unnecessary and undisciplined discourses, making egregious errors in the documentation of history, and shamefully modifying (or charging someone else to modify) historical hardware in its quest to support bogus claims; and an ability to thwart for decades truthful, objective counter-influences.

I'm referring of course to the Smithsonian's handling of the Wright brothers' accomplishment.

The performance of the Smithsonian Institution's management is now and has been highly flawed.

The best solution to this problem is to replace the upper-level management with responsible, knowledgeable, objective managers and curators—people having neither private agendas nor tendencies to overstep the museum's charter and especially people not prone to descents into fantasy.

This may be asking too much. I'm sure there would be a lot of resistance to replacing these entrenched people.

An alternative might be to reconstruct and display the entire *Enola Gay* as suggested by several others, or if the museum can't bring itself to tackle this "mundane" alternative, simply trash the entire plan for the aircraft's display and script and let someone else do it right.

My final recommendation is sure to demean the Smithsonian Air and Space directors. They should all be made to take a trip to Dayton, Ohio, and tour the US Air Force Museum. They just might learn how to run an effective, efficient museum.

Jerry W. Faust
Perkasie, Pa.

I read "The Three Doctors and the *Enola Gay*" with keen interest. You stated that Dr. Tom D. Crouch "was the curator of 'A More Perfect Union,' a controversial exhibit at the Museum of American History that commemorated the 200th anniversary of the US Constitution with a program on Japanese-American internment. (*Dr. Crouch's commitment to that issue has not flagged.)*" (Emphasis mine.)

Though I do not agree with Dr. Crouch's interpretation of the history of the *Enola Gay,* I concur with his

interpretation of the mistreatment of the Americans of Japanese Ancestry (AJAs) who were interned in concentration camps in America.

We Americans have not always had a rosy history on human rights, and we should not forget . . . what we did to black Americans, American Indians, and AJAs as well as the early Chinese in America. If we fail to remember them and what Hitler did to the Jews in the Holocaust, history will repeat itself with the American Hispanics, southeast Asian refugees, American Arabs, Asian immigrants, or Haitian refugees.

Your statements about Dr. Crouch came across as biased and distorted. They erroneously led me and, I'm sure, others to believe that it is a bad thing that Dr. Crouch wants to advertise America's inhumanity to the AJAs. This is where I think you are wrong.

You cannot fight for truth and justice as you have done with the *Enola Gay* and the atomic bomb on the one hand and yet try to stonewall the truth of the internment of the AJAs on the other. That is unconscionable. You lose credibility when you want to portray the true history of the atomic bombing of Japan but try to whitewash the inhumanities committed against the AJAs.

Please be consistent in your arguments, or you will not get the kind of support you are seeking and rightfully deserve. It is my sincere hope that Dr. Crouch's commitment to the issue of AJA internment never flags, and I also hope you maintain your commitment to getting and keeping the *Enola Gay* story accurate.

Robert T. Uda
Canyon County, Calif.

Despite all the discussions to the contrary, Martin O. Harwit seems to be hell-bent on doing the *Enola Gay* exhibit his way, a completely distorted view.

Those of us who were POWs in Japan, performing slave labor, were eyewitnesses to the events leading up to the atomic bomb drops. During thirty-four months of starvation, beatings, and watching fellow prisoners die, we worked alongside Japanese civilians, many of whom became our friends. In the caste system, they were nothing more than coolie laborers and during the last year of the war were almost as much prisoners as we were. Their food rations were down to starvation levels. . . . The military and civilian big shots were still living "high on the hog."

Within view of our POW camp on Tokyo Bay was Atsugi AB, where *kamikaze* pilots were being trained by the hundreds for the expected invasion of Japan. We POWs were told we would be executed at the beginning of the invasion, a fact we were already well aware of.

We watched the military buildup by the Japanese in the entire Tokyo Bay area to the extent that we realized that any invasion would be a prolonged affair and without a doubt the bloodiest loss of life in history. Our Japanese civilian co-workers knew this as well as we did, but they . . . were classified as essential labor by the Imperial Government and not allowed to evacuate the area.

Most of the military strategists estimate that two to three million lives were saved by using atomic weaponry. I think those estimates are much too low.

If Dr. Harwit wishes to express his politically correct views in a political forum, let him do it somewhere other than at the Air and Space Museum.

For myself and my Japanese civilian friends, "Thanks, *Enola Gay*."

Robert E. Altman
Lake City, Fla.

The continuing controversy regarding the display of the *Enola Gay* at the National Air and Space Museum saddens me. I thought that I might share with you an experience that may be helpful when discussing the issues of revisionist history and the proper setting for the aircraft.

While I was a member of the USAF Test Pilot School Class 85-B, our class toured the Paul E. Garber facility in January 1986. Among the various projects in restoration was the *Enola Gay.* Nobody in our group knew it still existed, much less that it was intended for display at the NASM.

Our class was a curious mixture. In addition to US officers, we had an Italian Air Force officer, a Taiwanese Air Force officer, and two pilots from the Japan Air Self-Defense Force. As we circled the forward fuselage of the *Enola Gay,* no one spoke. There was no discussion of history, no argument over decisions made during war, no guilt or blame or accusatory glances from the Japanese officers toward the US officers. All that remained was hushed, respectful introspection over the destructive nature of war and its consequences. I have felt that same atmosphere when I visited Arlington National Cemetery. I believe that this is the true legacy of the *Enola Gay.*

If the curators of the NASM are willing to listen to one more voice, I would suggest that the aircraft be displayed with a small plaque with the facts of its mission on August 6, 1945. Let history speak for itself.

Maj. Joseph S. Smyth,
USAF
Gunter Annex, Ala.

BUFFs in the Reserve

"Bombers in the Guard" *[October 1994, p. 32]* begins with a rather large error. In it David J. Lynch asserts that transferral of ten B-1B bombers was "the first time a reserve component unit had been given control of a long-range combat aircraft." Had he conducted a little more research, he would have learned that the 93d Bomb Squadron, part of the Air Force Reserve's 917th Wing, received its first B-52H bombers in December 1993, eight months before the July 1, 1994, acceptance of the B-1s by the Kansas Air National Guard.

John Andrew Prime
Shreveport, La.

A True Ace

I read with sorrow of the passing of Col. "Hub" Zemke *[November 1994 "Aerospace World," p. 22].* Though his fame as a fighter pilot extraordinaire and ace was earned in the skies over Europe during World War II, he will always be an ace with me for his qualities as a man.

In 1962, while I was struggling to qualify as a weapons director at Reno Air Defense Sector where Hub was in command, my less-than-brilliant record soon disqualified me. I was miserable. The ops crowd would have boiled me in jet fuel had Hub not intervened. He knew all about square pegs in round holes. "I know exactly how you feel," he said, noting that during the war he had flown everything in the sky. When the war ended and there was no longer any payola for aces, this born-to-the-cockpit jock said he was assigned to the Air War College, where he was expected to make lesson plans, lecture, shuffle papers, and read books. It was the most "miserable assignment" in his career.

He made me his chief administrative officer and befriended me. I never learned the reason for his compassion and understanding but concluded he was a man among men, a caring commander.

He will always be an ace in my book.

Maj. Roy L. Goodale,
USAF (Ret.)
Prescott, Ariz.

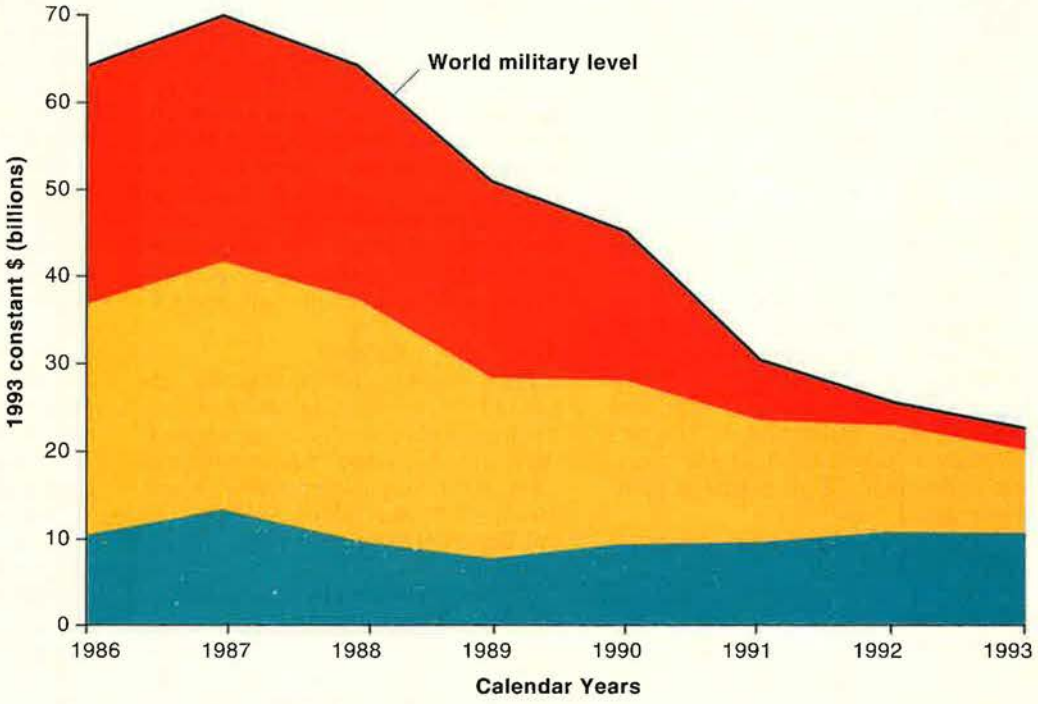
The Chart Page

By Tamar A. Mehuron, Associate Editor

The Drop in Global Arms Deliveries

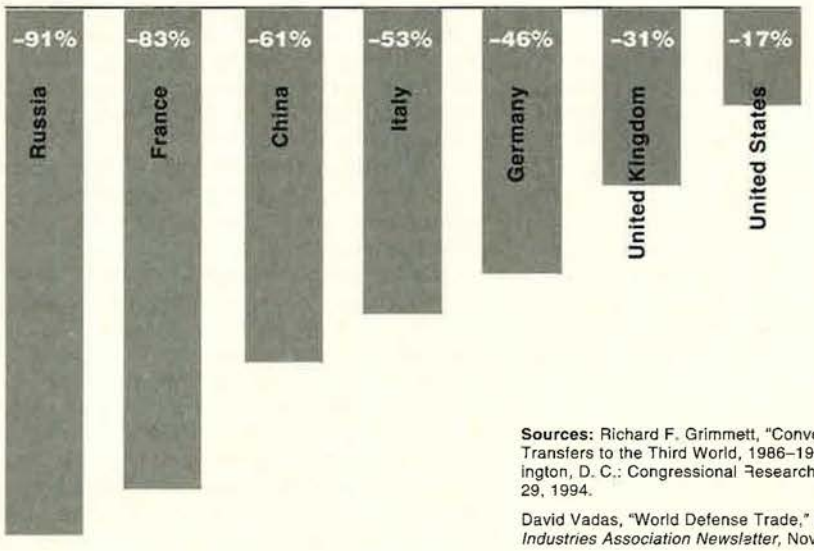
International arms deliveries have plummeted in recent years. In part, this reflects the winding down of major conflicts—the Iran-Iraq War and the war in Afghanistan, to name two. The most important causes, however, were the economic collapse of the USSR in the late 1980s and its political breakup in 1991—events that reduced and then ended Moscow's generosity toward clients. Russia now sells for hard currency, and many of its former buyers cannot afford to pay for weapons at true market prices.

Major Exporters' Percent Change, 1986–93



These charts show that of all major exporters, the US has suffered least. The outstanding performance of US weapons in Operation Desert Storm and the competitive pricing of its systems have solidified its former client base and brought the US new business, meaning it has actually increased market share. Large deals—a $9 billion sale of F-15 fighters to Saudi Arabia, a $7 billion sale of F-16 fighters to Taiwan, and a $3 billion sale of F-16s to Turkey—entail deliveries over many years.

Arms Exports: Percent Change by Supplier, 1987–93 (1993 constant $)



Sources: Richard F. Grimmett, "Conventional Arms Transfers to the Third World, 1986–1993." Washington, D. C.: Congressional Research Service, July 29, 1994.

David Vadas, "World Defense Trade," *Aerospace Industries Association Newsletter,* November 1994.

Capitol Hill

By Brian Green, Congressional Editor

Wrap-Up of the 1995 Defense Bills

Congress votes for a pay raise, acquisition reform, and depot competitions.

WHEN the 103d Congress finished its legislative work last fall, it had approved a defense appropriations bill consistent with the Clinton Administration's $263.8 billion request as well as a host of other defense-related and veterans' initiatives.

The Fiscal 1995 appropriations bill contained funds for operations and maintenance totaling $92.0 billion (vs. the DoD request for $92.9 billion). The bill provided $70.4 billion for military personnel (vs. $70.5 billion), $44.0 billion for procurement (vs. $43.3 billion), and $35.9 billion for research, development, test, and evaluation (vs. $36.2 billion). The balance went to construction and housing and to military programs in other agencies.

Among the significant congressional actions:

Personnel

Pay raise. The 1995 defense appropriations bill contained a 2.6 percent pay raise, an increase over the 1.6 percent requested by the Administration. Appropriators provided $185 million to help offset the cost of the raise, but the Pentagon will have to absorb much of the total by reducing expenditures in other areas.

Dental care. The 1995 defense authorization act, approved earlier, directed the Secretary of Defense to provide basic dental benefits for dependents of military members permanently stationed overseas. (At present, these families receive dental care only on a space-available basis.) DoD must implement a plan in early 1995 to address such shortcomings, starting in areas with the least access to acceptable primary dental care.

Veterans' Reemployment Rights

Congress strengthened reemployment rights for veterans returning from military service. The new measure requires civilian employers to rehire any honorably discharged veteran who returns from military service within five years of the date of last employment.

The measure prohibits an employer from denying employment, reemployment, retention in employment, promotion, or employment benefits based on an employee's or job applicant's military service or obligation. It also forbids an employer to punish those who use the new law to protect their employment rights. If reemployment is not possible or would cause the employer undue hardship, however, the employer may be excused from the reemployment requirements.

Acquisition Reform

New legislation. Congress approved a bill that Colleen Preston, the top Pentagon official for acquisition reform, called "the largest reform of the acquisition system since 1947"—the year Congress created the Department of Defense. The reform will:

- Raise the simplified acquisition threshold from $25,000 to $100,000. The new threshold will reduce at least some of the red tape and special demands placed on contractors for roughly ninety-nine percent of all DoD contracts. However, such small contracts account for only fourteen percent of defense procurement dollars.
- Establish a new Electronic Data Interchange/Electronic Commerce Interchange that will eliminate much of the bidding paperwork on many contracts. The new system is intended to save time and money.
- Remove many of the impediments DoD faces in acquiring commercial products. In some cases, DoD will be able to take advantage of lower prices in the larger commercial market.
- Implement a number of pilot programs in which a DoD weapon system will be considered a commercial product. These programs will be able to use commercial buying practices to lower their cost. Proponents of the legislation hope the lessons learned from pilot programs will be adopted by other program managers, leading to additional savings.

In the Fiscal 1995 defense appropriations bill, Congress reduced procurement programs across the board by $305 million in anticipation of procurement reform savings.

Depot competition. The 1995 defense appropriations act reinstitutes mixed public-private competitions for depot maintenance work (such contests had been suspended by the Pentagon earlier this year).

The appropriators argued that "a robust depot maintenance program should be considered fundamental to preserving military readiness" and ordered the services to fund at least eighty percent of depot maintenance requirements.

The measure gives "precedence in the immediate future" to the concept of interservicing, in which one service provides depot maintenance to systems of another service. Because of concern that interservicing is not being pursued with enough vigor, the appropriators "expect the Department [of Defense] to [make] specific depot interservicing proposals in conjunction with next year's budget submission and base closure and realignment recommendations."

Modernization

Bombers. The appropriations bill reflects the broad congressional concern over the effectiveness of the bomber force. The bill supports a number of munitions programs that could move up the date when bombers will be equipped with a precision-delivery capability. These include the conventional air-launched cruise missile, the Global Positioning System–Aided Munition, and the Have Nap cruise missile.

Joint Advanced Strike Technology Program. A technology transition program exploring next-generation strike aircraft, JAST was trimmed from $201 million to $186 million. It also was merged with an advanced short takeoff, vertical landing program that had been run by the Advanced Research Projects Agency, a move that could increase the JAST program's technical risks. ■

There's less land in our landing.

The C-17 has just landed and it's no big deal. Which is not to say the airlifter is anything shy of noteworthy. But one of the reasons it is so remarkable is that it requires so little distance to land – only 3,000 feet.

It's even agile on the ground. With an impressive 169,000 pound full payload, thrust reversers back and turn the C-17 in less space and time than other aircraft its size. Reverse engine exhaust is sent up and forward so the ground crew and Army troops can remain close at hand.

Add non-stop, direct delivery; a Low-Altitude Parachute Extraction System (LAPES); and wide-body capacity to fly large cargo like the M1 tank and Patriot missile launchers. Now you have an airlifter like no other.

The C-17. You can't land a better deal.

MCDONNELL DOUGLAS

Performance Above and Beyond.

Aerospace World

By Robert S. Dudney, Executive Editor

Did B-1Bs Ace the Test?

USAF officials said the B-1B turned in a strong performance in Dakota Challenge 1994, a critical new operational readiness assessment (ORA) of the long-range bomber.

"The good news is . . . the B-1 is performing superbly," said Lt. Gen. Stephen B. Croker, commander of 8th Air Force, on October 28, shortly before the six-month test ended December 1.

Congress launched Dakota Challenge, which began June 1, to determine whether B-1Bs could maintain a seventy-five percent mission capable rate when provided with 100 percent manning and spares support. The B-1 fleet has had much lower mission capable rates but had never been fully provisioned. The B-1B had to meet the standard to ensure that Congress will release $2.3 billion for conventional upgrades and avionics changes.

In the ORA, the B-1B mission capable rate quickly rose from sixty-six percent to eighty-four percent. The not mission capable rates for supply and for maintenance dropped to less than ten percent. The twelve-hour fix rate improved dramatically, to near 100 percent.

The ORA unit, the 28th Bomb Wing, carried out most of the test at Ellsworth AFB, S. D. In November, its bombers deployed to a remote bare base in New Mexico, where the aircraft operated for two weeks in a simulated wartime condition.

Fogleman Retailors Uniform

Gen. Ronald R. Fogleman, newly sworn in as Air Force Chief of Staff, moved immediately to change the USAF uniform.

The controversial uniform was introduced in October 1991 by General Fogleman's predecessor, Gen. Merrill A. McPeak. In a November 2 statement, General Fogleman said the uniform was "a superb choice—comfortable, good fit, quality material, good image." Even so, he said, he wanted "midcourse" changes to enhance "acceptability, functionality, and appearance."

Photo by Paul Kennedy

Shrouded in protective plastic, the forward fuselage of the* Enola Gay, *the B-29 that dropped the atomic bomb on Hiroshima, Japan, was moved to the National Air and Space Museum in Washington, D. C., November 22. (See box, opposite.)

The General said the enlisted coat with stripes is popular and won't change, but he will reintroduce rank to the shoulders of officers' coats. Those who have a coat with sleeve insignia should wear it until it can be modified with an epaulet fix or until USAF produces a schedule for transition to another type.

The Chief of Staff emphasized that officers won't need a new jacket for an official photo because official photos no longer will be a part of promotion folders.

Service hats, said General Fogleman, will be mandatory for field-grade officers, but the policy is being reviewed for company-grade officers and enlisted troops.

Insignia, Ribbons, Badges

In his message about the uniform, General Fogleman stated that officers and enlisted members will wear the US insignia without circle on the lapels.

The General's direction on ribbons is as follows: "Wear all, some, or none, but when worn, ribbons must be worn in the right precedence." This applies to any uniform combination designed for ribbon wear.

Anyone who earns a badge may wear it throughout his or her career. However, General Fogleman said, no more than four may be worn at any given time.

He made no immediate change on name tags, though he cautioned that "the jury's still out" on that issue.

The next uniform board is scheduled for early 1995. The service intends to canvass its members for "good ideas on all Air Force uniforms" to present to that board. General Fogleman intends to disband the uniform board after its next round.

DoD Gets $25 Billion Boost

President Clinton declared December 1 that he would raise his previously planned six-year defense budget total by $25 billion.

The increase would apply to the Fiscal 1996–2001 period.

The boost marked at least a rhetorical U-turn in the White House course on military spending, which the Administration cut sharply in its first two years and planned to cut further. The

President's policies drew heavy Republican criticism in the 1994 elections.

Congressional Republicans generally welcomed the White House move, though they claimed the increase was too small.

Even with the $25 billion addition, budgets will fall in absolute terms. Under current plans, defense spending won't go up again until Fiscal 1998 at the earliest. More than half of the $25 billion would be held back until 2000 and 2001.

DoD said the money would make it possible to fully fund readiness, heftier pay hikes, and such quality-of-life steps as housing for troops, as well as some weapon modernization after the turn of the century.

The Pentagon's number two official, Deputy Defense Secretary John M. Deutch, called it "very, very good news for defense."

In a separate move, the President said he would ask Congress for an emergency $2 billion boost in the current Fiscal 1995 budget to fund unanticipated operations in Haiti, Bosnia-Hercegovina, and elsewhere.

The President did not say where he would get the extra money.

Bombers Dispatched to Kuwait

In a demonstration of the Air Force's long reach, four USAF bombers flew nonstop from the northern United States to the Persian Gulf region to complete a bombing exercise at the Udairi Range in Kuwait. Kuwait had been threatened by Iraqi troops.

The Pentagon said that in the November operation, two B-1Bs and two B-52 long-range heavy bombers dropped 110 Mk. 82 dumb bombs, totalling about 55,000 pounds of ordnance. "I think the accuracy was pretty good," said spokesman Kenneth Bacon.

The B-1B bombers were launched from Ellsworth AFB, S. D., and the B-52s came from Minot AFB, N. D. The B-1Bs flew a round trip of twenty-five hours and the B-52s a round trip of twenty-nine hours. In both cases, tanker aircraft provided aerial refueling. The flights were completed November 1, US time.

The flights marked the first B-1 deployment to Kuwait. Mr. Bacon said the flights were part of routine training exercises conducted quarterly since 1992. The most recent event in the series had taken place on August 2—the fourth anniversary of Iraq's invasion of Kuwait.

Perry Concedes Readiness Woes

Defense Secretary William J. Perry conceded that US forces are facing readiness problems. Some Pentagon officials said these problems were akin to those seen in the late 1970s and early 1980s.

In a letter to congressional leaders, which the Pentagon released on November 15, Secretary Perry stated that emergency Army operations in Rwanda, Haiti, the Persian Gulf, and elsewhere had left three of the Army's twelve divisions below peak preparedness. Only a few weeks earlier, Deputy Secretary of Defense Deutch had maintained that force readiness was stronger than it had been in years.

The Pentagon said a combination of unforeseen operations abroad, which were not reimbursed by Congress, led to the lowest series of readiness ratings the Army has seen in a dozen years. Officials said that readiness declined as training for troops and maintenance of equipment were raided over the summer to compensate for temporary cash shortages. The three Army divisions had been rated C-3, the second lowest of four categories.

McPeak to USAF: We're OK

The general who led USAF for the past four years said he saw little cause to worry about Air Force readiness or operations tempo, despite the problems cropping up in other services.

Gen. Merrill A. McPeak delivered his against-the-grain assessment in remarks on October 11 to the Defense Writers Group in Washington, D. C. He surprised many with his upbeat view, given the concerns expressed by some senior military leaders about the current high operations

Air and Space Museum Hit by Academic Backlash

Under fire from the Air Force Association and other veterans' groups, the Smithsonian Institution and the National Air and Space Museum were moving to correct blatant political biases and imbalances in the museum's plan to exhibit the *Enola Gay,* the B-29 that dropped the atomic bomb on Hiroshima. On November 16, however, forty-eight "historians and scholars" delivered a letter of protest to Smithsonian Secretary I. Michael Heyman demanding that the imbalances and biases be restored.

The scholars charge that by giving in to the Air Force Association "and other special interest groups," the Smithsonian has subjected its exhibition, scheduled to open in May 1995, to "historical cleansing." (Illustrative of the material "historically cleansed" out of the museum's original script was a preposterous assertion that "for most Americans, it was a war of vengeance," whereas "for most Japanese, it was a war to defend their unique culture against Western imperialism." The initial script had forty-nine photos of Japanese casualties compared to only three of American casualties. In effect, it portrayed the Japanese as victims rather than aggressors in World War II.)

The letter to Secretary Heyman was distributed at a press conference held November 17 by eight scholars who had presented an even stronger protest statement to Dr. Martin O. Harwit, director of the Air and Space Museum. The group of eight wants the exhibit to speculate further about whether the use of the atomic bomb was necessary and to declare that Japan was "near defeat" when the bomb was dropped. The scholars call on the Smithsonian to revise the impression that Hiroshima was "a legitimate and primarily military target."

It should also be made clear, the scholars say, that estimates of American casualties in the event of an invasion of Japan are inflated and that "military planning documents at the time showed no more than 46,000 expected US deaths." (It is not known whether the protesters know about Medical Plan Olympic, dated July 31, 1945, which was based on the assumption of 394,859 casualties in the first 120 days of an invasion. The requirement for whole blood was set at 149,000 pints. Anyway, even if 46,000 "expected US deaths" had been the worst-case estimate, that is hardly a prospect to dismiss lightly.)

The scholars also want the museum to restore the deleted parts of the "Ground Zero: Hiroshima and Nagasaki" section, which was designed as the "emotional center" of the exhibition. This section originally had more than 100 visual elements including life-size pictures of the dead and dozens of personal artifacts, including a schoolgirl's lunch box with remains of peas and rice reduced to carbon. The museum director said the emphasis on women, children, and mutilated religious objects was "happenstance," not a deliberate ideological twist.

"The Institution is now being criticized from both ends of the spectrum—from those who consider the exhibition as a 'revisionist' product critical of the United States to those who accuse us of staging an exhibition which glorifies the decision of the United States to use atomic weapons," Secretary Heyman said. "This indicates to me that we are probably squarely in the middle, which, as a national institution, is not a bad place to be."

—John T. Correll

tempo of a dramatically smaller force.

"I don't want to leave the impression that we're being stretched all that thin," General McPeak reported. "The Air Force is in great shape today. Our readiness is very high."

In a veiled reference to leaders of other armed services, he added, "You do not see me walking around town saying, 'The Air Force is on the razor's edge' or 'It's about to fall off the cliff,' or disappear, or 'It's the end of intelligent life in the universe,' or some of these other statements that I've heard."

The General acknowledged that the Air Force is seeing "spot problems." These entail overwork of the service's small number of high-value aircraft. "They kind of meet themselves coming and going," he said, "but aside from that, the Air Force is not stretched all that thin."

General McPeak retired October 25.

Republicans Look Harder at Defense

The Republican take-over of Congress this month foreshadows major new challenges to the Clinton Administration's national security policies.

Rep. Floyd D. Spence (R–S. C.), in line to become chairman of the Armed Services Committee in the new, Republican-controlled House this month, said in a statement, "This Administration is showing the classic symptoms of denial in claiming, after two years of devastating budget cuts and significant wear and tear on overextended forces, that readiness is higher than it has ever been. . . . The picture from the field is markedly and disturbingly different."

Representative Spence said that twenty-eight Marine and Navy aviation squadrons had to ground half their aircraft in September because of a lack of funding for aircraft operations and maintenance.

The new leader of the Senate Armed Services Committee will be Sen. Strom Thurmond of South Carolina, a staunch supporter of expanded funding for the armed services. The panel he chairs already is deemed the most conservative in Congress.

In their "Contract With America," Republicans called for restoring budget "firewalls" to prevent raids on the Pentagon's budget to fund domestic programs. They called for a new review of US national security goals, a renewed commitment to a national defense system, and curbs on foreign peacekeeping operations.

Big Future for Joint STARS?

The Air Force, the Army, and their aerospace contractors brought the E-8 Joint Surveillance and Target Attack Radar System aircraft to Europe to launch a major overseas sales effort amid signs that the E-8 was headed for a larger-than-expected USAF production run.

The Air Force announced that Eurostar '94, a demonstration of the E-8 and its ground-station modules for European defense officials, began October 18 at RAF Mildenhall, UK, and ended October 28.

The first mission was a practice flight over England and Germany. UK officials came aboard the second flight to observe the plane in action. From Britain, the aircraft moved to the NATO Airborne Early Warning base, Geilenkirchen, Germany, for demonstrations there and in Brussels.

The demonstrations promoted the E-8 as the answer to NATO's airborne ground surveillance requirement. The US recommended that the Alliance purchase twelve of the aircraft, with modules. No final decision will be forthcoming for at least a year.

The Air Force is committed to buying twenty E-8s, but Deputy Defense Secretary Deutch stated on October 26 that final production may top forty.

"I do not believe this is going to be a twenty-airplane program nor a forty-airplane program," he said in an address to Northrop Grumman workers in Louisiana. "I think this airplane program is going to go on and on and on."

USAF Urged to Clear F-15 Pilot

A military judge urged the Air Force to drop all judicial proceedings against Lt. Col. Randy May, an F-15 pilot, for his part in the 1994 shootdown of two Army helicopters over northern Iraq.

Colonel May's commanding officer, Maj. Gen. Eugene D. Santarelli, had to approve or disapprove the recommendation.

Colonel May and another F-15 pilot shot down the UH-60 Black Hawks on April 14, mistaking them for Soviet-made Iraqi Mi-24 "Hinds." The attack killed fifteen US citizens and eleven foreign nationals aboard the helicopters. The pilots were assigned to the 53d Fighter Squadron, Spangdahlem AB, Germany.

A July 13 DoD report blamed the disaster on human error and procedural failure. In September, Colonel May (but not the other pilot) was charged with negligent homicide and dereliction of duty. The Air Force also brought dereliction charges against five crew members of an E-3 Airborne Warning and Control System (AWACS) aircraft that was involved in the accident.

General Santarelli, commander of 17th Air Force, opened an Article 32 hearing to determine whether Colonel May should face a court-martial on the charges. The two-day hearing ended November 9. On November 22, USAFE announced that Col. Edward M. Starr, the judge conducting

Rockwell International Corp.'s GPS/INS guidance unit was found to reduce pilot work load and improve weapon effectiveness in simulated missile flight profiles. Fifty-nine flight tests have been completed aboard an AGM-130 missile mounted on an F-111 at Eglin AFB, Fla.

the hearing, recommended that USAF forgo a court-martial of Colonel May.

The statement did not elaborate on the reasons for Colonel Starr's recommendation.

Decision on AWACS Crew

Action in the May case followed a recommendation by another military judge to proceed with charges against an Air Force captain who was aboard the E-3 AWACS aircraft involved in the accident.

Following an Article 32 hearing at Tinker AFB, Okla., the investigating judge, Col. William Colwell, said the Air Force should seek a general court-martial of Capt. Jim Wang, the senior director of the AWACS crew. Colonel Colwell recommended administrative punishment of one other crew member, Lt. Joseph M. Halcli, but dismissal of all charges against three others who faced judicial action.

The final decision on these cases rested with Lt. Gen. Stephen B. Croker, commander of 8th Air Force.

The Pentagon's accident investigation said five AWACS crew members failed to respond to data indicating the Black Hawks were US helicopters, not Iraqi. When the fighter pilots informed the AWACS operators of unknown radar contacts, the E-3 failed to inform the pilots of the location and identity of the Black Hawks.

Four of the AWACS crew members were assigned to the 963d Airborne Control Squadron at Tinker. The fifth was assigned to Air Combat Command air operations, Langley AFB, Va.

AFRES Techies Safe in 1995

Under new legislation, Air Reserve technicians (ARTs) will remain protected from virtually all job actions throughout Fiscal 1995, which ends September 30.

Air Force Reserve officials say that only major decisions—such as further reductions in USAF force structure or further base closings—could cause ARTs to lose their jobs during this fiscal year. ARTs are civilians but have always been considered part of the military force structure. AFRES says that it stood to lose up to 440 ARTs until the law was passed.

The Fiscal 1995 defense appropriations bill states that the law "prohibits funds to be used to reduce military technicians . . . for the purpose of applying any administratively imposed civilian personnel ceiling, freeze, or reductions."

Size Down, Work Up

New statistics from USAF's two largest operational commands show that their troops have rarely been busier or away from home so often or so long.

Photo by Henry B. Ham

Celebrating the 457th Fighter Squadron's fiftieth anniversary, the specially painted squadron commander's bird (top aircraft) flew formation over Dallas/ Fort Worth with the 457th's first aircraft, the P-51 Mustang.

Reports from Air Combat Command and Air Mobility Command confirm that operations tempo is up significantly. In the fall, the Air Force at any given time had about 20,000 troops deployed abroad on temporary duty (TDY).

In the period 1989–94, the Air Force shrank so rapidly and its operations expanded so greatly that the number of Air Force members on TDY grew by a factor of four, ACC said. In 1992, the command carried out twenty-seven overseas deployments, both exercises and real-world combat operations. In 1993, that figure grew to forty-nine. In 1994, it was sixty-seven.

Pressure is especially heavy for C-5, C-141, KC-10, and KC-135 aircraft crews. AMC reported that the number of missions grew from 2,819 per month in October 1993 to 3,273 a month in October 1994.

Numerous USAF members are away from home more than 180 days per year. In ACC, crews and support units for four weapon systems—the HC-130, EC-130E, E-3 AWACS, and U-2—were on TDY in excess of 180 days a year. Also heavily tasked are ACC's civil engineering, services, medical, and Security Police personnel.

RIP for Old Fighter Lines?

The Air Force appears to have closed the door—again—on the notion of buying additional current-generation fighters.

"As of this point, there is no plan to purchase any additional F-15s or F-16s," said Clark G. Fiester, the assistant secretary of the Air Force for Acquisition, in an October 28 statement.

Lockheed Fort Worth had offered last year to sell the Air Force more of its most advanced F-16s at a flat price of $20 million per copy. McDonnell Douglas has offered the F-15E at about $50 million per copy.

Mr. Fiester said, "Assuming our plants can go forward with the F-22 as we currently plan it, by 2010 we will have sufficient aircraft in the inventory . . . to support the [Clinton Administration's] strategy of [being able to fight and win] two major regional conflicts."

Mr. Fiester said that the Air Force is preparing a number of recommendations for dealing with the problem of aging fighters. He added that Gen. John Michael Loh, commander of ACC, had asked USAF acquisition officials to take yet another look at the entire fighter roadmap.

Mr. Fiester said that General Loh essentially wants to know, "Can we achieve more of a ground-attack capability with the F-22 so we can better, more effectively justify the program?"

AFRES Gets New Leader

Maj. Gen. Robert A. McIntosh officially assumed leadership of the Air Force Reserve, becoming the twentieth commander of AFRES in its forty-six-year history and at the same time chief, Air Force Reserve, in Washington, D. C.

General McIntosh, a fighter pilot

USAF photo by Paula J. Moore

Maj. Gen. Robert A. McIntosh (right) became the new Air Force Reserve leader last October, replacing Maj. Gen. John J. Closner III (center). General McIntosh, former commander of 22d Air Force, Dobbins ARB, Ga., will be the main Reserve affairs advisor for Air Force Chief of Staff Gen. Ronald R. Fogleman (far left).

by trade and a former AFRES vice commander, succeeded Maj. Gen. John J. Closner III in the two posts. General Fogleman, the new Air Force Chief of Staff, officiated at the October 31 change-of-command ceremony at Robins AFB, Ga.

General McIntosh will serve as the new Chief's main advisor on Reserve affairs and will have an office in the Pentagon.

General McIntosh served at Robins as AFRES vice commander from November 1990 to July 1993, managing the day-to-day operations of the Selected Reserve's unit reservists and aircraft. In his most recent assignment, he served as commander of 22d Air Force at Dobbins ARB, Ga. He directed Reserve strategic airlift and air refueling units east of the Mississippi River.

In his new job, he will be in charge of the entire Selected Reserve. From his Pentagon position, he will be responsible for about 66,000 unit reservists who fly, maintain, and support some 450 aircraft and, through an associate program, another 300 active-duty aircraft.

AMC Launches New Warfare Center

The Air Force opened a major new educational center for its mobility professionals.

Called the Air Mobility Warfare Center (AMWC), it is an arm of Air Mobility Command and was officially established at McGuire AFB, N. J., last September 30, though it had been operating more or less at full speed ever since its first class arrived in June.

The first commander, Brig. Gen. William J. Begert, said that the center will bring under one roof for the first time the business of training, educating, and testing the mobility troops and developing new doctrine. He said that AMWC consolidates some twenty-five courses formerly taught in seven locations. More than 200 instructors and staff members will teach the courses.

All are designed to prepare the Air Force's future air mobility leaders, said the General, adding that he expected some 6,000 students to attend AMWC courses annually.

AMWC will also handle unit training, known as the combat operations course. "In the deployed combat operations course, we will instruct fifty to 100 of the key leaders in a unit," said General Begert.

USAF Names Top Athletes

The Air Force's Male Athlete of the Year for 1994 is a Security Police instructor who competes at the top level of world triathlon competition. The Female Athlete of the Year is a research biomedical engineer highly skilled in the five disciplines of modern pentathlons.

Capt. Michael P. Buonaugurio is assigned to Air Education and Training Command's 343d Training Squadron, Lackland AFB, Tex. He placed first in the Triathlon Federation Midwest Division and second in the Military Division at the 1993 Ironman World Championship in Hawaii. He was elected to the Triathlon Federation All-American Team for the third straight year.

Capt. Teresa R. Lewis is assigned to Seymour Johnson AFB, N. C. She is the only military member of the US Women's Modern Pentathlon Team. At the 1994 Pan American Championships in Calgary, Alberta, Canada, she won a bronze medal in the women's individual event, gold medals in riding and fencing, and a silver medal in swimming.

Both athletes now advance to the Armed Forces level of competition.

Recruiters Claim Banner Year

Despite a poor start, Fiscal 1994 turned out to be one of the best recruiting years in recent history, the Pentagon said.

The Pentagon openly worried early in 1994 about problems of bringing in sufficient numbers of high-quality high school graduates.

In a November 3 report, Deputy Secretary of Defense Deutch said that in Fiscal 1994 the armed forces met recruiting quotas and "far surpassed" recruit quality patterns of the past decade.

He said the Pentagon's 1994 performance in attracting high-quality new service members was the third-best in history. The best was 1992; 1991 was second-best.

During the year, the services pulled in 184,096 recruits. Ninety-six percent of the total for all services were high school graduates. Seventy-two percent scored above average in aptitude on the Armed Forces Qualification Test. Less than one percent of the new cohort scored in the lowest acceptable AFQT category.

The Air Force booked 30,000 new enlistments, 100 percent of its goal. Ninety-nine percent held high school diplomas, and more than ninety-nine percent scored in the highest AFQT categories.

"We have given recruiting special attention during the past year and are pleased with the results," said Mr. Deutch. He still worries about a "continuing false perception" that the US is no longer recruiting, a factor in the earlier problems.

For Troops, More Money to Keep

At a time when US forces were deployed in significant numbers to Haiti, Kuwait, and other areas, President Clinton took steps to ease the

financial burden of overseas duty. It will add up to hundreds of dollars per month for the average troop, the Air Force reports.

On October 28, the President signed an executive order changing the definition of field duty, a change that permitted enlisted service members deployed "under orders, with troops, against an enemy" to be categorized as being under temporary duty orders.

The upshot, said USAF officials, is that enlisted personnel will now continue to receive their basic allowance for subsistence—which can amount to as much as thirteen percent of pay—even while deployed on operations against an enemy.

Enlisted personnel thus will not have to forfeit the approximately $200 per month that they receive in BAS.

USAF Seeks ROTC Scholars

The Air Force put out the word in December that it is seeking highly qualified candidates to take part in the Reserve Officers Training Corps scholarship program.

Service officials explained that although the ROTC scholarships are aimed mostly at graduating high school seniors, they are also available to enlisted men and women who meet specific criteria. AFROTC provides an Early Release Program for airmen who are already working on a degree and who can complete all requirements within two years.

Airmen selected for the program are discharged from service within thirty days of their class starting date and return to active duty as second lieutenants within sixty days of receiving a commission.

Thus far in Fiscal 1995, the service has selected eighty-two airmen for the program.

Teachers Sought for AFJROTC

On another ROTC front, the Air Force announced that it needs retired USAF commissioned and noncommissioned officers to fill full-time high school teaching positions at eighty new Air Force Junior ROTC units opening in 1995.

The announcement stated that applicants must have completed at least fifteen years of active duty and not be retired for more than four years. Those currently on active duty are eligible to apply if they are within six months of an established retirement date.

The instructors are employed by school boards and serve as full-time faculty members in their assigned schools. Federal law requires that an individual's retired pay be augmented by the school pay to the level received when he or she last was on active duty.

The program is being run by Headquarters Air Force ROTC at Maxwell AFB, Ala.

Leave Home Without It

The airman carried the American Express card in his wallet and apparently just couldn't leave it there. Therein lies what Air Combat Command views as a cautionary tale.

According to an official ACC news report, the unnamed, eight-year USAF veteran, based at Nellis AFB, Nev., pulled out the plastic frequently—to pay for car repairs, stereo equipment, cellular telephone service, and other personal items. He used it to withdraw cash advances from a local automatic teller machine.

He ran up more than $10,000 in unauthorized charges. Then he either could not or would not pay the debt.

The airman did all this not with his own American Express card but with one issued to him by the US government. Under federal regulations, an Air Force member may use the card only for official, reimbursable travel expenses or for cash advances authorized by official travel orders.

"No one can claim ignorance about the limits on using the government American Express card," maintained Capt. Jim Slear, the prosecutor in this case. "After all, the card has 'For US Government Travel Only' printed in bold letters on its face."

The airman was tried in a court-martial for misusing the government credit card. He was convicted and expelled from the Air Force with a bad conduct discharge. Then a panel of officers and enlisted members busted him back to airman basic.

No Further Troop Cuts

Though modernization programs already have been slashed, they will be cut further in the next few years to close a Pentagon budget gap. That, at least, was the implication of Defense Secretary Perry's November 7 statement ruling out Fiscal 1996 troop cuts below the level of 1.45 million.

The Pentagon officially conceded that its projected budget shortage over the next five years is $26 billion to $40 billion. The main question is how to cut costs to bring them in line with expected funding levels.

"We have a very complex problem of putting our whole budget together," said Mr. Perry, adding, "of the things we are considering, one of them is not a reduction in troop forces."

Pentagon officials said that such a statement left open the options of cutting operations and maintenance—and decimating force readiness—getting more money out of Congress, or cutting procurement and research accounts.

In a November 10 statement, the Defense Secretary announced that he would find an additional $2.7 billion over five years to improve the quality of life for US troops. It is to be spent to improve military housing, provide child care, and pay for cost-of-living allowances in high-cost areas.

The Air Force has awarded Martin Marietta Services Group a $20 million contract to provide engineering support for the development and operation of the Air Combat Engagement Simulator. The five-year ACES training program will be operated out of Luke AFB, Ariz.

In the later statement, Secretary Perry did not announce where he would get that money, but weapons seemed the most likely target.

Rules of the NATO Club

Three major NATO nations—the United States, Great Britain, and Germany—have agreed on the conditions a nation must meet in order to become a full-fledged member of the Alliance. The agreement set no specific dates for entry. The prospective member must demonstrate an irreversible commitment to democracy, civilian control of the nation's armed forces, independence of the military from the nation's internal security forces, and an infrastructure of military hardware and communications compatible with those of NATO members.

The guidelines were hammered out behind closed doors in November with the expectation that they would be approved by the North Atlantic Council at its scheduled December meeting.

In a development that split NATO in 1994, Poland, Hungary, the Czech Republic, and Slovakia sought immediate entry into the Alliance in order to gain some measure of protection against the perceived threat of a resurgent Russia. The US and Britain were reluctant to approve such a step, fearing that to push NATO's border rapidly eastward would provoke a backlash in Russia. Instead, the Alliance offered the Partnership For Peace program, best described as an informal affiliation with NATO but with no promise of full membership anytime soon.

The latest guidelines do not speed up the process.

Overseas Drawdown Slows

The latest round of cuts in the US overseas presence snared just one US Air Force facility—and a minor one at that.

In an October 27 release, DoD announced plans to close Idenheim Communications Annex, a USAFE complex at Bitburg AB, Germany. Idenheim was one of twenty-seven new US sites marked for closure. The rest belonged to US Army Europe or US Atlantic Command.

The relatively small size of the latest cut indicated that the overseas drawdown may have bottomed out, especially for the Air Force. One reason: There's not much left to cut. Air Force presence in Europe has dropped from nine fighter wings in 1990 to a little more than two today. A similar force remains deployed to the Pacific theater.

According to Pentagon statistics, the 1990–95 overseas drawdown has brought closure or partial closure of forty-four big Air Force sites. (Individual facilities closed number in the hundreds.) The drawdown has been felt most sharply in Europe, where USAFE lost major air bases in Britain, Germany, the Netherlands, Belgium, Spain, Greece, Turkey, Italy, and Iceland.

According to the Pentagon statement, the US armed forces since January 1990 have ended or reduced operations at 944 overseas sites. The overwhelming majority—871—were in Europe.

Eliminated in the course of these actions were some 248,600 US positions: 176,300 active-duty military, 23,300 US civilian, and 49,000 local nationals.

Defenders of the Ozone

The Air Force won five major awards in 1994 for protecting Earth's ozone layer. The Environmental Protection Agency presented the awards on October 25 to two individuals and three organizations:

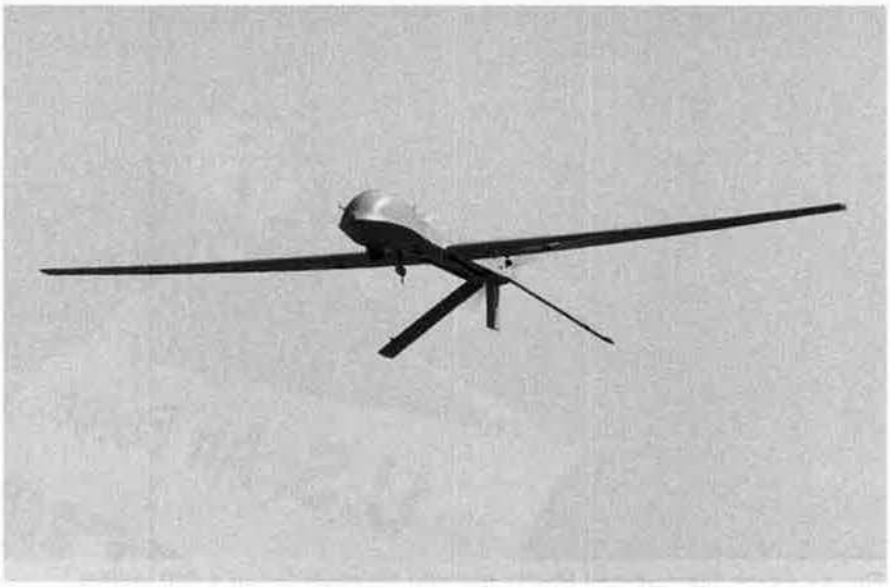
- Lt. Gen. James A. Fain, Jr., then commander of Aeronautical Systems Center, Wright-Patterson AFB, Ohio (now USAF's assistant vice chief of staff). He won the Leadership Award for guiding and supporting ASC programs aimed at preventing pollution and eliminating ozone-depleting solvents in USAF systems.
- Steven Rasmussen, a project manager at Hill AFB, Utah. The leader of the base's ozone-depleting substance (ODS) elimination drive, he initiated actions that reduced Hill's usage of such substances from 435,140 pounds to 46,140 pounds a year.
- Aerospace Guidance and Metrology Center, Newark AFB, Ohio. Workers developed an alternative solvent that helped the center replace one containing ODSs. Since 1988, EPA said, the center has reduced its use of problem substances by eighty-seven percent.
- Falcon Halon Team, Wright-Patterson AFB, Ohio, which developed a three-part approach to eliminating halon, an ODS, from the F-16 fighter's fuel tank inerting systems. The team is at work developing a substitute for halon.
- Aeronautical Systems Center, which eliminated ODSs from current and future Air Force weapon systems.

The Real Thing Counts

When a Reserve fighter unit deploys overseas for an actual contingency, it will get credit toward its training requirement.

That marks a shift for units of 10th Air Force, which is changing its rules to reflect the fact that its units are now frequently asked to provide personnel and equipment for overseas military operations.

According to the AFRES news service, Air Combat Command still wants its Reserve units to demonstrate,



Promising expanded range, endurance, and payload capacity, General Atomics Aeronautical Systems, Inc.'s Predator Tier II (above) is in flight testing along with another high-performance unmanned surveillance aircraft, the Gnat-750.

Lockheed's "enhanced strategic" F-16 fighter, fitted with mock conformal fuel tanks (mounted above the wings), two 2,000-pound laser-guided bombs, two AMRAAMs, and two AIM-9 missiles, demonstrates its handling in test flight.

every four years, the capability to mobilize, deploy, employ, and redeploy. This always had been carried out through Checkered Flag exercises. However, said AFRES, units that undertake real-world missions can ask for Checkered Flag credit. If credit is granted, the four-year clock is reset to zero.

Ames's Damage Assessed

The Senate Select Committee on Intelligence reported that under questioning, CIA turncoat Aldrich H. Ames confessed to betraying more than 100 US and allied intelligence operations and might have compromised hundreds more.

In a thick report released November 1, the Senate panel flatly declared that Mr. Ames had "caused more damage to the national security of the United States than any spy in the history of the CIA."

With the information provided by Mr. Ames, the Soviet KGB quickly pinpointed deep-penetration spies of several nations and immediately arrested and executed the Western spies. The agents, said the Senate report, "were regarded as among the most important CIA human sources at the time."

Mr. Ames operated as a double agent from 1985 until his arrest in early 1994. He pleaded guilty and is serving a prison term.

Where Are the Troops?

The largest permanent overseas concentration of Air Force personnel is in Germany, and the second largest is in Japan.

Despite the Air Force's stake in the Mideast–Persian Gulf region, it maintains virtually no permanently assigned forces there.

Those conclusions emerged from a November 7 Defense Department report on worldwide deployments. It showed that German bases supported 18,358 Air Force members as of June 30, 1994. Japan was host to 15,345 USAF troops.

In all of the twenty-four nations of the Middle East and southwest Asia, only 355 USAF members are permanently assigned. Nearly 200 of those are in Saudi Arabia. These figures mask the true capability of the Air Force, which can deploy significant numbers of combat aircraft on short notice and which keeps in theater a large "temporary" force of combat aircraft.

By contrast, there are 44,103 Air Force troops on permanent duty in Europe (including 11,855 in Britain, 4,583 in Italy, and 3,174 in Turkey) and 24,547 Air Force members in the Pacific theater (including 8,828 in South Korea).

News Notes

- Lockheed began flight testing an aircraft modified to represent its new "enhanced strategic" F-16 fighter. A company test pilot spent two hours on November 5 flying the modified F-16C equipped with two mock fuel tanks attached to the upper wings and fuselage. The real twenty-four-foot-long conformal tanks would greatly extend the range of the F-16, giving it an unrefueled combat radius (with ordnance) of more than 1,000 miles.
- In October, C-141 airlifters belonging to Air Mobility Command carried medical supplies and other emergency aid to Russia for victims of flooding in the Russian Far East. The StarLifters hauled about twenty tons of supplies from Kadena AB, Japan, to Vladivostok. The supplies were distributed to four hospitals north of the city. Floods in the area already had killed eleven persons and left many homeless, the Air Force said.
- The Air Force's Security Police field got its first female chief master sergeant, USAF announced November 8. She is CMSgt. Lois Miller, 21st Security Police, 21st Space Wing, Peterson AFB, Colo. The Air Force first admitted women to the SP career field in 1972.
- Air Force Special Operations Command rolled out on November 14 the first model of its latest aircraft—the AC-130U Spectre gunship.

Senior Staff Changes

RETIREMENT: B/G George A. **Gray** III.

CHANGES: B/G Donald A. Lamontagne, from Chief, Forces Div., J-8, Jt. Staff, Washington, D. C., to Dep. Dir., Roles and Missions, J-5, Jt. Staff, Washington, D. C. . . . **B/G Eugene L. Tattini,** from Vice Cmdr., Space and Missile Systems Ctr., AFMC, Los Angeles AFB, Calif., to Dir., P&P., Hq. AFMC, Wright-Patterson AFB, Ohio, replacing M/G Stephen P. Condon.

SENIOR EXECUTIVE SERVICE CHANGES: Donald C. Daniel, to Dep. Dir., Science and Technology, Hq. AFMC, Wright-Patterson AFB, Ohio, replacing Allan C. Schell . . . **Blaise J. Durante,** to Dep. Ass't Sec'y, Mgmt. Policy and Prgm. Integration, OSAF, Washington, D. C. . . . **Merrill L. Minges,** to Dir. of Engineering, F-16, ASC, Hq. AFMC, Wright-Patterson AFB, Ohio, replacing Maurice R. Himmelberg . . . **George K. Richey,** to Dir., P&P., Wright Laboratory, Hq. AFMC, Wright-Patterson AFB, Ohio, replacing Merrill L. Minges . . . **Raymond P. Urtz, Jr.,** to Dep. Dir., Rome Laboratory, AFMC, Griffiss AFB, N. Y., replacing Fred I. Diamond. ▪

The ceremony at Hurlburt Field, Fla., featured a live-fire demonstration of the new gunship, which sports greatly improved sensors, targeting equipment, radars, electronic warfare systems, and a Gatling gun. The Air Force expects Rockwell International to deliver thirteen by August 1995.

■ October 31 was the thirty-fifth anniversary of USAF's first intercontinental ballistic missile alert. The first Air Force ICBM—an Atlas D liquid-fueled system—gained operational alert status on October 31, 1959, at Vandenberg AFB, Calif. In commemoration, the Air Force held observances at eleven sites. President Clinton sent a congratulatory message.

■ Three newly modified U-2 spy planes, designated U-2S, arrived October 28 at the 9th Reconnaissance Wing, Beale AFB, Calif. The aircraft had received new, uprated General Electric engines. The U-2 group comprised two U-2ST two-seat trainers and one U-2S operational aircraft.

■ Ejection seat problems led to flying restrictions for eighteen B-1B bombers in early November, Air Combat Command announced. ACC said it had discovered a defect in the ejection seats of five B-1s at Dyess AFB, Tex., five at Ellsworth AFB, S. D., two at McConnell AFB, Kan., and another six now in depot maintenance at Tinker AFB, Okla. Repairs were completed within two weeks.

■ James Wold, the Defense Department's top official for POW/MIA matters, returned November 3 from a fact-finding trip to Vietnam. He said his visits to excavation sites "reinforced my earlier, favorable impressions of the hard work being done" to account for missing US servicemen. He said Hanoi "recognizes the critical importance" of making progress on the POW issue.

■ VA health-care services are used heavily by veterans covered by other public or private insurance, said an October 24 General Accounting Office report. GAO said that more than half of the 2.2 million persons who use VA services each year are eligible for Medicare, but they turn to VA because they receive more extensive coverage that way.

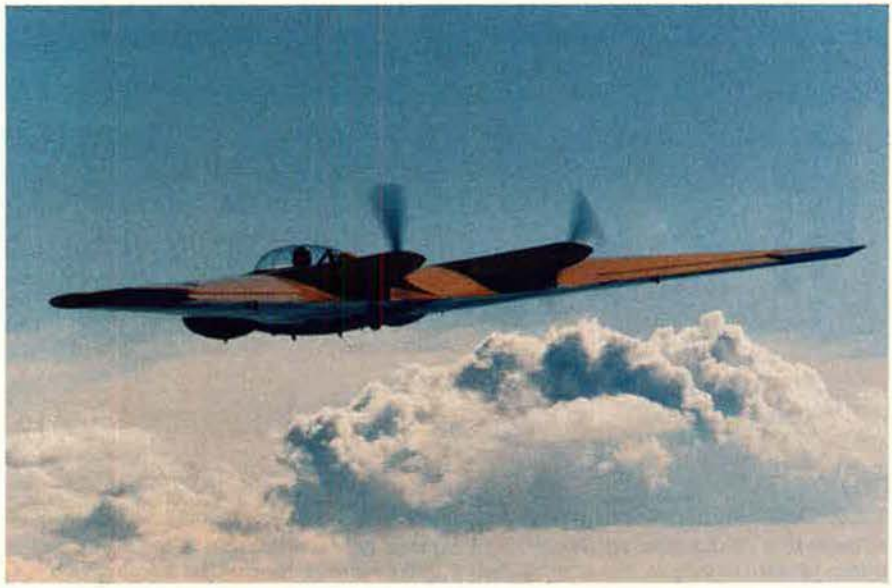


Photo by Frank B. Mormillo

One of four development aircraft built for the Air Force's B-35 and B-49 wing program in the 1940s, this twin-engine N9M-B has completed twelve years of restoration at the Planes of Fame Air Museum in Chino, Calif.

■ Former Chief of Staff Gen. Merrill A. McPeak maintained that USAF has "too much depot capacity"—maybe fifty percent too much—for its future needs. He said in an October 11 meeting with the press that the Air Force should close one or two of its five large Air Logistics Centers during the 1995 base-closing round.

■ Robert M. Gates, a former director of the Central Intelligence Agency, was elected to the board of directors of TRW, Inc., on October 26. Mr. Gates was the head of CIA and the Director of Central Intelligence in 1991–93. He had served earlier as the CIA's number two official.

■ Air Force Col. Kevin P. Chilton and Naval Reserve Capt. William F. Readdy were chosen November 8 by NASA to be the pilots of the third and fourth space shuttle missions to dock with Russia's space station Mir. Colonel Chilton will command STS-76 in March 1996, and Captain Readdy will command STS-79 in July 1996. Each space shuttle flight will last about ten days.

■ McDonnell Douglas and Northrop Grumman agreed November 1 to pool their resources to compete for the Pentagon's proposed new advanced short takeoff and landing aircraft. The industry team also includes a British Aerospace unit. The aircraft would replace the Marine AV-8B Harrier II and perhaps other aircraft.

■ President Clinton approved on November 6 a Pentagon plan to withdraw 7,800 US troops from Kuwait by

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December 22 and 6,000 US troops from Haiti by December 1. The moves were to leave no US ground forces in Kuwait, though a considerable residual force of USAF and Navy units remained in the area. The remainder of the US force in Haiti—about 9,000 troops—were to be pulled out in small units over a longer period.

■ Edward C. "Shy" Meyer, Chief of Staff of the US Army in 1979–83, was named chairman of GRC International, a Virginia information services company. General Meyer headed the recent Pentagon commission on readiness.

■ The 450th Intelligence Squadron, the largest Air Force tenant at RAF Chicksands, UK, was inactivated November 10. The Air Force said the squadron's classified mission had involved secure radio communications between US and allied forces. It had begun operations at Chicksands in August 1950, just after the onset of the Cold War and the Korean War.

■ Orbital Sciences Corp. announced October 20 that a subsidiary had been granted full Federal Communications Commission authority to construct, launch, and operate a network of up to thirty-six low-Earth orbit satellites. The system is intended to provide a range of low-cost mobile satellite communications services. The license is said to be the first of its kind granted by the FCC.

Purchases

McDonnell Douglas Corp. won a $189.8 million contract to develop systems to update and modernize the APG-63 radars in more than 350 of the company's existing F-15C/D fighters. The work aims to make the radar ten times more reliable and maintainable than is now the case. Actual retrofits are to begin in 1999 and will proceed at the rate of seventy-two fighters per year.

Martin Marietta Corp. won a $450.7 million Air Force contract to build aircraft night-vision systems for Bahrain, Greece, and Saudi Arabia. Martin said the contract value includes $272 million in advance funding received in 1993.

Westinghouse Electric Corp.'s Baltimore division won a $195.6 million order for 157 advanced radar units to be installed on F-16 fighters. They will equip F-16s that will be delivered to Taiwan as part of a 1992 sale of 150 F-16s to the Asian nation.

Boeing announced on October 28 that Japan had placed a $773 million order for two additional 767-200 Airborne Warning and Control System aircraft, making them the third and fourth of the total procurement. Japan had ordered the first two 767-200 AWACS in 1993 and had pledged to buy two more.

TRW won a $138.7 million contract to provide research and development support for the National Test Facility, Falcon AFB, Colo., through January 2000. The contact is to expire in January 2002.

Obituary

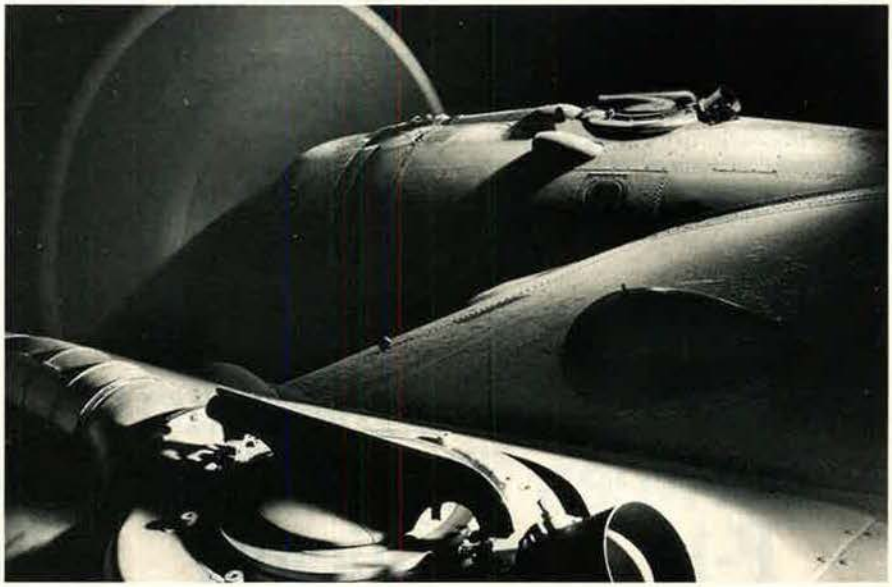
Lt. Kara S. Hultgreen, one of the US Navy's first female combat pilots, was killed at sea October 25 when the F-14 Tomcat interceptor she was flying crashed into the Pacific near San Diego, Calif., during an attempted carrier landing.

Twenty-nine-year-old Lieutenant Hultgreen, assigned to USS *Abraham Lincoln,* apparently was ejected into the water from the cockpit of her aircraft, though her radar-intercept officer managed to escape and was rescued. The body of Lieutenant Hultgreen was recovered, and an accident investigation was under way. ■

Wright-Patterson labors to hold the US lead in airframes, propulsion, and avionics.

At the Aeronautical Frontier

By Peter Grier



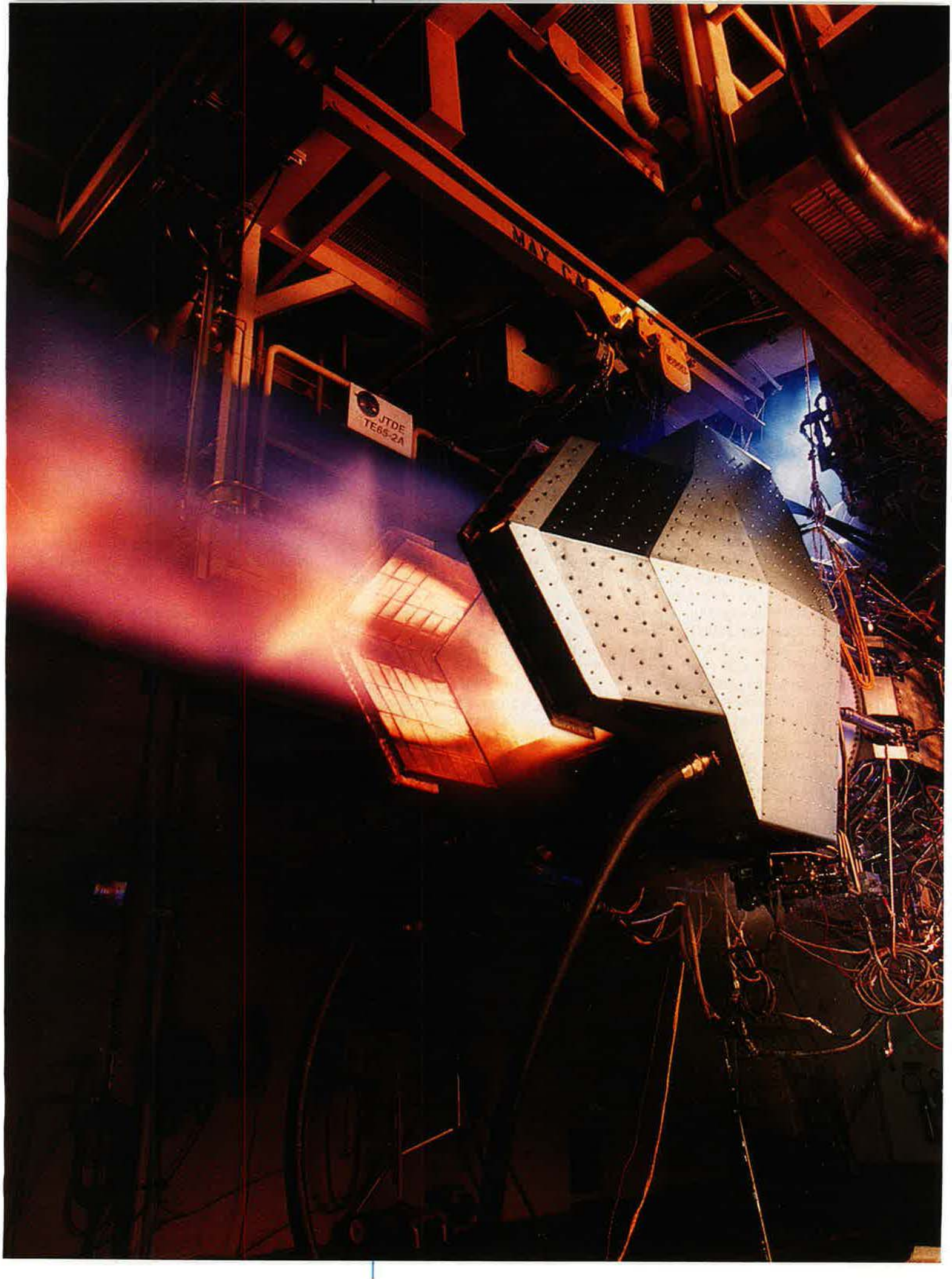
From the piston-driven engines of World War II (above) to the Integrated High-Performance Turbine Engine Technology powerplant of tomorrow (opposite), Wright Laboratory has been at the forefront of testing technologies that make aircraft faster, more capable, and more efficient.

RESEARCHERS at Wright-Patterson AFB, Ohio, engineered the first practical metal monocoque airframe. They built a high-output supercharger that made possible the B-17 bomber, conducted wind-tunnel research on the Air Force's first jet fighters, and static-tested everything from the big B-36 Peacemaker bomber to the swift and agile F-15 fighter.

Today the center of Air Force aeronautics no longer develops forty-three new models of aircraft at a time, as it did at the height of World War II. Much of the effort at Wright-Patterson is aimed at making existing airplanes last longer, cost less, and perform more efficiently.

The scientists and engineers at Air Force Materiel Command's Aeronautical Systems Center (ASC) and Wright Laboratory understand that the United States is not the only nation working hard to make technical breakthroughs. Part of the job entails staying ahead of the competition.

"We're here to make sure there aren't any technological surprises for the US" from other nations' aeronautics programs, said Lester Smithers, Jr., deputy director of Wright Laboratory.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The IHPTET program has already reaped benefits. The F119 engine that powers the F-22 incorporates organic matrix composite parts and integrally bladed rotors developed by IHPTET contractors.

Some of ASC's goals are daunting. Take, for example, the propulsion goals stated in the official Defense Department Technology Plan, produced under the auspices of Anita K. Jones, director of defense for Research and Engineering. The recently released plan calls for development by 2003 of a US military turbojet/turbofan engine with double the thrust-to-weight ratio of the 1987 powerplant. Under terms of the technology plan, fighter and attack aircraft should see a 100 percent increase in their range and payload capability by 2010. Acquisition cost of bombers and airlifters is to be cut by half.

Materials, manufacturing processes, structures research, system data integration—all will have to accomplish substantial gains if overall goals are to be met. The budget payoff could be substantial.

As the Pentagon's technology report said, "Since one-third of DoD's annual budget ($85 billion per year) supports aircraft expenditures, improvements in air vehicle cost and capability offer significant potential for reducing defense expenditures."

Built on Engines

If one technology program can be called the foundation of ASC and Wright Lab efforts, it is the one involving turbine engines and propulsion. Much of the cost and weight of an aircraft structure is concentrated in its engines, particularly in the case of fighters. The amount of power limits performance and influences the development of airframe shape.

Wright Laboratory's work on next-generation engines centers on the Integrated High-Performance Turbine Engine Technology program. Launched in 1988, IHPTET is an aggressive program involving all the services, the Advanced Research Projects Agency (ARPA), and the nation's major engine contractors. Essentially IHPTET aims to at least double the propulsion capability of turbofan/turbojet, turboshaft/turboprop, and expendable engines.

IHPTET Phase I has just been completed, with Wright Lab's turbofan/turbojet project meeting a goal of thirty percent thrust-to-weight improvement. Phase II, with a goal of sixty percent improvement, is scheduled for completion in 1997. The doubling of capability called for in the final phase is supposed to be accomplished by 2003.

This three-step approach "allows us to reduce the technical risk of taking one giant leap," said William E. Koop, IHPTET program manager for Wright Lab. "It also reduces the political risk of not delivering anything for a long period of time."

In fact, the program has already produced something of a payoff. The F119 engine, selected to power USAF's F-22 Advanced Tactical Fighter, incorporates organic matrix composite parts and integrally bladed rotors developed by IHPTET contractors.

The thirty percent boost in turbofan/turbojet performance achieved in Phase I could be traded for a twenty percent increase in payload for existing fighter-attack aircraft, according to Mr. Koop. If incorporated in a new weapon system from the ground up, "it could result in a twenty per-

Photo by Randy Jolly

IHPTET is building on the success of earlier programs, such as the Increased Performance Engine program, already in production, which improved the thrust-to-weight ratio of operational fighters like the F-16.

cent reduction in the gross weight of the aircraft," he said.

Bigger returns may lie ahead. The greater performance of Phase III engines should, among other things, reduce mission fuel consumption by one-third.

One of the main areas of fighter engine progress so far has been in the development of new materials for engine use. Ceramic matrix composites, for instance, are increasing the performance of engine combustor panels. Hollow, metal matrix composite fan blades have shaved pounds and allowed more efficient fan shapes.

Structural innovation has been another area of major progress. An advanced turbine rotor was a Phase I success. A new nozzle incorporating a spherical section promises a twenty percent weight savings over two-dimensional vectoring nozzles.

IHPTET engine-cooling advances are also increasing performance. Using advanced thermodynamic models, Pratt & Whitney has developed what it refers to as "supercooling," said Mr. Koop. In essence, this process involves directing cooling air precisely where it is needed, rather than flooding fan blades with a cooling stream.

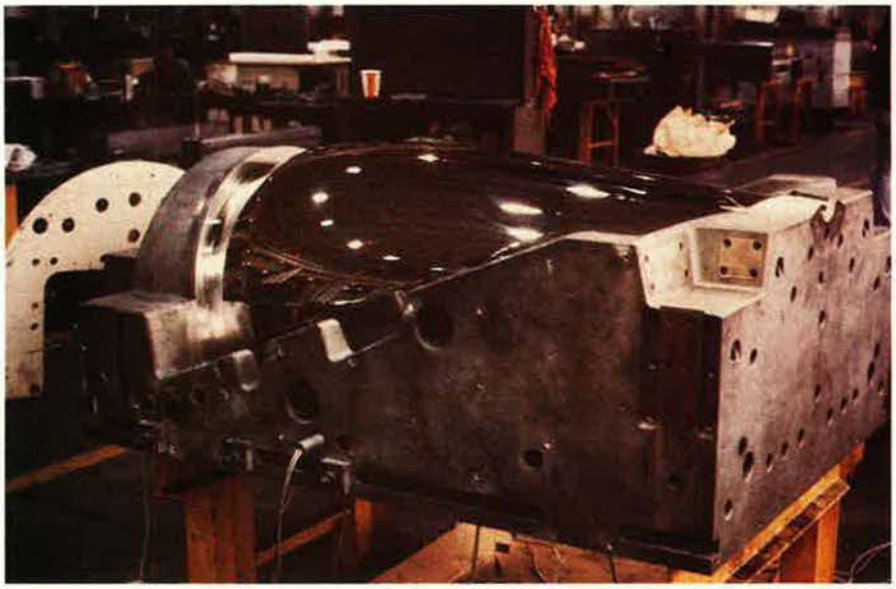
Contractors willing to risk their own research dollars are a prime pillar of IHPTET support. Fully fifty-six percent of the program's funds comes from industry. About thirty percent comes from the Air Force, with the other services providing smaller amounts.

Mr. Koop—who sits on an IHPTET steering board with counterparts from the Army, Navy, ARPA, and NASA—said he believes Phase II goals will be met by 1997. He cannot really say what that engine will look like. "We're making trade-offs as we go forward," he said. "Two years from now the design could be totally different."

Savings From Components

Engines are the prime focus, but Wright Laboratory is also looking to less complex aircraft components for cost savings and quality improvements.

Consider fighter-attack canopies. Though seemingly simple structures, they are difficult and expensive to produce. Each canopy is essentially handmade through a process of heating, bending, reheating, and rebending polycarbonate resin sheets. Fitted to aluminum frames, they then must be carefully custom-fitted to airframes.



Wright Lab doesn't ignore the smaller, less expensive details. Though a fighter-attack canopy costs only $20,000, fabricating canopies through injection molding could result in big savings and improved durability and optical properties.

Cracking at attachment holes is a problem. So is the quality of the view through the canopy. "Each [canopy] is different," said Mike Grar, program manager for injection-molded canopies at Wright Lab's Flight Dynamics Directorate, "so each has different optical coefficients that have to be entered into the fire-control computer."

A canopy costs some $20,000 and only lasts an average of a year and a half. If canopies could be injection molded, in a process similar to the way tiny canopies for model airplanes are produced, the result could be big savings. The problem is that for something as large as a fighter windshield, current high-pressure injection technology would require an enormous amount of clamping pressure to hold the mold in place.

Wright Lab scientists have developed a process that employs careful computer control of temperatures and multiple channels in the mold to produce high-quality canopy components using low-pressure injection techniques. The process promises to enable mass production of polycarbonate canopies with similar shapes and optical properties—at around $800 a copy.

The new canopies do not need metal frames. Workers should be able to replace them in far less time than is the case with today's models.

Mr. Grar and his predecessor, Bob Pinnell, hold several patents critical to this process. They said they have produced flawless F-16 partial canopies that have passed a number of birdstrike strength tests. They are already thinking of possible commercial spin-offs.

"Maybe stronger transparent basketball backboards," joked Mr. Pinnell. "We could build one nobody could break."

Similarly, materials research is providing solutions for problems that have dogged the operational Air Force for years, draining dollars and precious maintenance man-hours.

The F-117A Stealth fighter, for example, has long been troubled by deterioration of its fuselage trailing edge. Heating tiles that protect the edge from the buried engine's exhaust sometimes flake off during flight, leaving an unprotected composite substrate that can be badly damaged by the exhaust's heat before the aircraft can return to base.

"Basically, it's a typical aging aircraft type of problem," said Ken Johnson of Wright Lab's Nonmetallic Materials Division.

A new composite material developed under Wright Lab auspices, AFR700B resin, is now being used to fabricate F-117A trailing-edge

F-22 Team Photo by Eric Schulzinger

Not all of Air Force Materiel Command's experimental technologies pay off. Testing high-tech touch-sensitive display screens in the F-22 cockpit, for example, revealed that pilots prefer old-fashioned buttons.

parts that can stand up to higher temperatures. Produced by workers at the Sacramento Air Logistics Center, McClellan AFB, Calif., the new edges are estimated to save at least $5 million on the life-cycle cost of an F-117.

AFR700B resists damage—be it from hail or dropped tools—much better than the material it replaces. It is also much more expensive to produce—$500 a pound, as opposed to perhaps $50 a pound for more traditional composites.

Mr. Johnson said the Air Force could make greater use of tough composites in engines. IHPTET has represented some progress in this regard, he said, adding that "the engine is the last stronghold of metals."

Big Contributions

As IHPTET, canopy technology, and AFR700B composite materials demonstrate, ASC's Wright Lab is involved in everything from basic research to advanced product development. One of four superlabs in the Air Force, Wright Laboratory has directorates focusing on solid-state electronics, avionics, armament, flight dynamics, and manufacturing as well as materials and aeropropulsion.

With an organizational history that stretches back to 1917, when the Army established an Airplane Engineering Department at McCook Field near downtown Dayton, Ohio, the work accomplished at what is now Wright Lab has contributed much to the state of US aerospace technology—commercial as well as military.

"If it flies in our country, it has some connection to our directorates," said Mr. Smithers. "We've been dual-use since Wilbur and Orville."

The lab has an authorized strength of 2,800, the vast majority of them civilians. Mr. Smithers said he and other lab managers are trying hard to get their percentage of employees with doctoral degrees up to thirty percent. About forty-three percent of the Air Force's science and technology budget flows through Wright Laboratory; total spending comes to about $1 billion per year.

Over the last four years, as most of the Air Force has struggled with deep budget cuts, the laboratory has

Tweaking Up the F-22

Buffeted by the stress and strain of budget cuts, Aeronautical Systems Center's F-22 program is entering the final stages of advanced development with some "significant design challenges" still ahead of it, said Maj. Gen. Robert F. Raggio, head of the F-22 System Program Office.

One challenge is engine development. The ground-breaking nature of the F119 engine design, with its counterrotating fans, has meant that not everything worked as predicted first time around. Other challenges include fuel consumption, software integration, and radar cross section reduction. These glitches are understandable, said General Raggio, because "we are doing things on the F-22 that have never been done before."

Today's weapon programs do not seem to be allowed to have any setbacks in the development process, he said. The public and lawmakers should realize that development "is a time when we see if we can do things or not," said General Raggio.

One way the F-22 program has tried to keep problems at a minimum is by bringing in the operational user for consultation from the beginning. Original requirements called for an everyday boarding ladder as an integral part of the aircraft, for instance. But users told designers they really did not need a ladder capable of taking the stress of a 220-lb. pilot jumping on it day after day. A light structure for occasional use was adequate. This shaved precious pounds from the design.

Engineers at first considered outfitting the F-22 with an articulated seat for increased G-force protection. Pilots said such a seat did not really help. Designers also thought high-tech touch screens would be fine for the cockpit instead of old-style buttons. Test flights proved such an approach a disaster. During the stress of maneuvers, pilots could not press what they wanted.

"We went back to buttons," said Col. William Jabour, chief of the Integrated Product Team in the F-22 System Program Office.

Instead of the gauges and readouts typical of existing fighter cockpits, the F-22 will feature six flat-panel displays. These screens will show only information the pilot wants to see, when he wants to see it.

The big oil-pressure gauge on an F-15, for instance, displays information that is important "only for about two minutes" per flight, according to Colonel Jabour. On the F-22, the oil-pressure readout can be hidden away in favor of something more important at the moment, such as threat information. "We have flexibility" in the F-22 cockpit, said Colonel Jabour. "The pilot can display what he wants."

seen its funding remain relatively stable. On the other hand, authorized personnel have been sharply reduced, leading to something of a manpower problem. The result may be a change in lab focus in coming years. "We may not be doing as much ourselves, but we'll be orchestrating it" as contractors carry out the job, said Mr. Smithers.

Photo by Randy Jolly / Arms Communications

Thanks to advances in composite material development, F-117 trailing edge parts are now fabricated out of a new resin, which is not only harder to damage but can withstand higher temperatures.

High Payoff From Structures

Aircraft structures work already reflects such a change. Twenty years ago, Wright Laboratory's structures division had three times as many people as it does today. With in-house expertise now at a premium, structures officials are directing their energy at a few areas that they believe promise a high payoff.

The first of these is structural-life enhancement. It is no secret that many USAF aircraft are still flying beyond their original projected retirement dates. Keeping this aging fleet in the air will only become tougher as budget cuts delay modernization. Bombers, airlifters, and tankers are a particular problem. In 2014, Air Force pilots will be flying KC-135 Stratotankers that will be more than fifty years old.

Wright Lab provides the technology base for most service life extension efforts. Patch kits put on C-141 StarLifters to solve the airplane's weep-hole cracking difficulties were developed by Wright-Patterson technicians. Research involves development of models that will predict how quickly tiny cracks will turn into big problems and study of how corrosion and material fatigue interact.

"The Air Force has traditionally not had much of a corrosion problem, but age is now catching up to the fleet," said Donald B. Paul, structures division chief scientist.

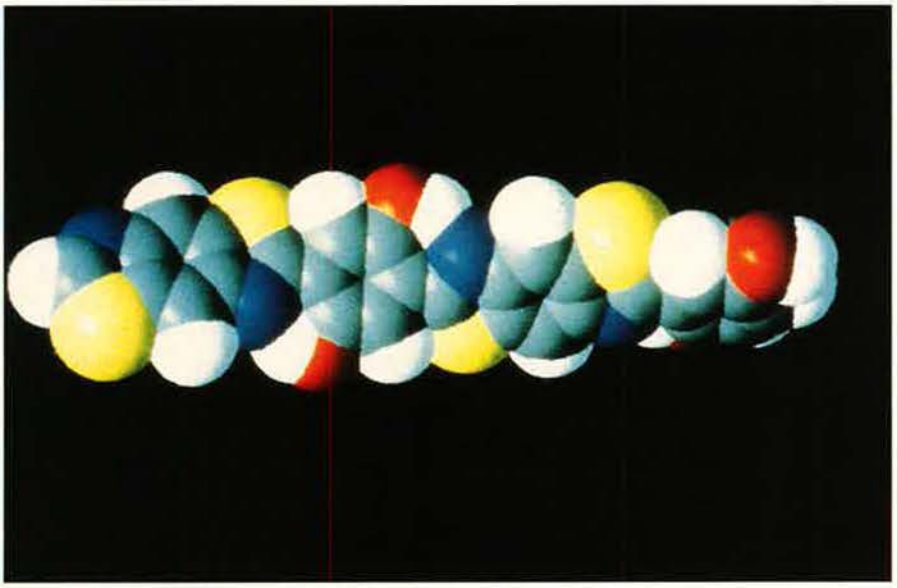
A second structures core area is technology integration. Among other things, it aims at reducing the cost and weight of future aircraft by making extensive use of today's technical breakthroughs.

In one recent project, structures researchers redesigned a typical mid-fuselage section. They chopped its cost in half and its weight by a quarter. The trick, said Dr. Paul: "We got rid of a lot of fasteners."

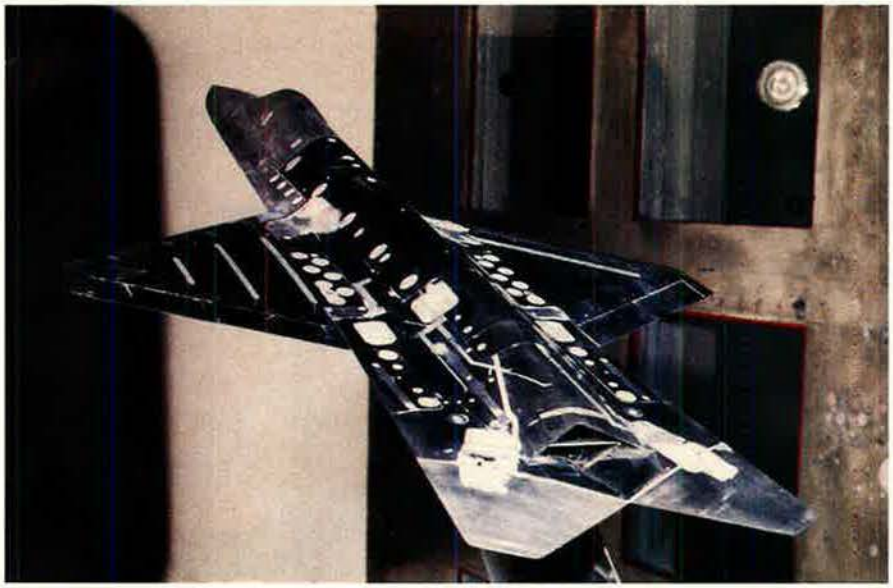
The Active Flexible Wing is a technology integration effort that, in a way, is taking aeronautics back to the future. Instead of focusing on a heavy, rigid wing with hinged control surfaces, the project's flexible wing twists to provide flight control. It is a technique similar to the wing-warping used by the Wright brothers for their original aircraft, and its possible benefits include greater control, reduced drag and weight, and greater latitude in possible wing shapes.

"You don't see this kind of technology being incubated in [civilian] companies," claimed Dr. Paul.

Other areas of interest for the structures division include research into extreme environments (producing airframes able to withstand the stresses of engines buried for stealth purposes, for instance) and so-called "smart structures." The latter has focused on development of aircraft that would react automatically to changes in their environment—a wing that would alter its airfoil for greater efficiency in the event of battle damage, perhaps, or a vertical



Scientists at the Aeronautical Systems Center's Wright Lab can make such advances in materials through the use of computational techniques that allow them to experiment with structures at the molecular level.



Personnel at Wright Lab work hard to achieve improved performance at reduced cost, whether the aircraft is an experimental design (like this wind tunnel model) that will fly decades from now—if ever—or an old warhorse like the KC-135.

tail that changes its own stiffness in response to turbulence.

A "smart" weapons bay might make it far easier to attack targets with internally carried munitions. Today pilots typically have only a narrow range of airspeed in which they can open bay doors and launch weapons. The problem is acoustic-sonic energy—noise so powerful it can destroy internally carried stores when the bomb bay doors are opened.

On current aircraft, weapons bay aerodynamic spoilers, similar to those on car sunroofs, reduce the noise and danger to munitions. But these can only be "tuned" to perform efficiently in a limited airspeed range. Active measures to automatically reduce acoustic energy could widen this window, said Dr. Paul, giving a pilot greater freedom to roll in on target at any speed he would like.

Looking at Aircraft Design

Overall, the flight dynamics of weapons carriage is receiving greater attention at Wright Lab than it has in past decades. This means more than just internal stores. Wright Laboratory researchers are working on a "slick missile," an externally carried weapon with much less drag than current models.

The Flight Dynamics Directorate is looking anew at the entire issue of aircraft design for optimal range-weapons payload capability. That means studying everything from wings with different aspect ratios to the possibility of tailless aircraft.

This effort stems from the fact that, in the wake of the 1991 Persian Gulf War, Air Force operators have a keen interest in carrying larger payloads farther than they can today. Said Russell Osborn, Jr., technical manager of the Aerodynamics and Performance Section, "They're putting more emphasis on that than on maneuverability."

That does not mean that aircraft maneuverability is no longer an aerodynamics issue. Designing an aircraft for low radar cross section can sacrifice its agility, and Wright Laboratory researchers are looking at ways of restoring qualities that have been lost. One possibility is a "neural net" smart structure that links sensors scattered throughout the aircraft and automatically adjusts flight surfaces for optimum maneuverability.

Wright Lab is also studying possible designs for a fixed-wing special operations aircraft that is stealthy and can land on a short landing strip. Researchers insist this effort is far from the beginnings of a new weapon program. "We're just looking to build an aerodynamics database," said Mr. Osborn.

As the home of much Air Force work on X-series experimental aircraft, Wright-Patterson has a long tradition of pushing the envelope of flight. Perhaps the most ambitious such program that ASC researchers have ever participated in recently came to an end. Budget cuts have done in the Pentagon-NASA National Aerospace Plane (NASP) project, which was investigating the possibility of taking off from a runway and jetting directly into Earth orbit.

"The Defense Department cannot afford an expensive X-plane development program at this time," said Col. Robert S. Heaps, former director of the NASP Joint Program Office.

Technical papers summarizing what was learned from NASP are being boxed and archived for future reference. Meanwhile, the program has been transformed into the small-scale Hypersonic System Technology Program (HySTP). This more limited effort, carried out jointly by the Air Force and NASA, will address the single most difficult aspect of hypersonic flight: propulsion.

Specifically, HySTP will try to resolve uncertainties about the performance of scramjets at high Mach numbers. Scramjets are supersonic combustion ramjets that use rapidly moving air and hydrogen or hydrocarbon fuel. No one has ever really demonstrated how much fuel they consume or how efficiently they work at extremely high speeds.

HySTP officials intend to build small scramjets, bolt them to the top of spare intercontinental ballistic missiles, and test their operation at Mach 15. The first launch is scheduled for 1997.

The test vehicles will roar upward in a semilofted trajectory to approximately 100,000 feet, where they will reach the desired speed for a test window of five to twenty seconds. Obtaining similar data through a ground test would be a much more expensive proposition, said Colonel Heaps, who directs the joint program office that manages HySTP.

"This is the most cost-effective way to get the data we need," he said. ■

Peter Grier is the Washington, D. C., defense correspondent for the Christian Science Monitor *and a regular contributor to* Air Force *Magazine. His most recent article, "What's Left of the Air Force Program?" appeared in the December 1994 issue.*

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NORTHROP GRUMMAN

When things start popping in the field, action also picks up for USAF's operations hub in the Pentagon.

XO

By John A. Tirpak, Senior Editor

LAST October 7, senior Air Force officials were attending their semiannual Corona conference when word came that Iraqi troops were on the move toward Kuwait. Lt. Gen. Joseph W. Ralston, the Air Force deputy chief of staff for Plans and Operations, got a quick briefing on a secure line. He was left in no doubt that the situation was serious.

Intelligence said things were starting to look dangerous. General Ralston recalled, "I went to the Chief [Gen. Merrill A. McPeak, Air Force Chief of Staff] and said, 'I think it's best I get home and take a look at this,' and he concurred."

Late that night, General Ralston flew back from Colorado to Washington, D. C. En route, he activated an operations cell at USAF headquarters near Washington where, in a Pentagon subbasement, dozens of experts on munitions, logistics, plans—even medical and legal issues—converged and began pulling in any and all information on the unfolding crisis.

When he came in early Saturday morning, said General Ralston, "We—the Air Force—started formulating plans so that when we met with the Joint Staff, we would have a consolidated position."

Air Force Secretary Sheila E. Widnall and General McPeak returned from Corona late Saturday. General Ralston met them at Andrews AFB, Md., just outside the capital. All the way back to the Pentagon, he briefed them on the movements of the Iraqi Republican Guard and Air Force preparation of its fighters, bombers, and logistics forces.

The two Air Force leaders wanted to know many things. What airpower was available for combat? Did Air Force units have certain types of weapons on hand, in the right places? They had what seemed like a thousand questions. General Ralston, having asked most of them himself earlier in the day, had most of the answers at his fingertips.

The Air Force Answer Man

That, of course, is his job. To Air Force personnel, General Ralston is known simply as XO, from the office's symbol. The brevity of the title belies the enormousness of the task, however. He is the man expected to have answers whenever USAF is asked questions, and it doesn't mat-

ter whether the questions come from Air Force brass, the White House, senior Pentagon leaders, other services, or members of Congress. He is responsible for knowing what is going on with thousands of aircraft, hundreds of units, and scores of thousands of airmen.

In times of crisis, his office becomes a clearinghouse for information, with dozens of conduits coming in and just as many going out. His job is to anticipate future questions and have the answers ready. The future can be the next few hours or the next thirty years.

In his effort to develop answers, General Ralston is assisted by six directors, each heading his own shop. There is one director each for Plans, Operational Requirements, Forces, Operations, Weather, and Modeling, Simulation, and Analysis. Separately and in concert, these one- and two-star general officers examine how the Air Force is going to accomplish its mission and explain the options to senior leadership.

In assuming the office of XO, General Ralston succeeded Lt. Gen. Buster C. Glosson, the controversial Air Force officer who retired amid charges that he had improperly attempted to influence an Air Force promotion board.

"As I came in, XO had had a lot of reorganization and turmoil," General Ralston recalled. "I can live with the organization the way it is now. It may not be absolutely perfect, but it's probably better to have some stability in the organization right now . . . instead of any big reorganization."

As XO, General Ralston does not command any operational forces, but he acts as the fixer, the officer who makes sure there are no obstacles to prevent an operational unit from carrying out its mission.

For instance, USAF scrubbed the nighttime launch of a warning satellite in mid-October after technicians found foreign matter in the fuel. The next morning, when General Ralston got the word, his primary responsibility was "to be sure that Space Command is getting all the help they need from the Pentagon . . . without [DoD] getting in their way," he said. If an airplane were needed to fly a critical part to Vandenberg AFB, Calif., to get the satellite launched, then he would make sure that the plane was available.

A key figure in General Ralston's lineup of subordinates is Brig. Gen. Michael J. McCarthy, the operations director, also known as XOO. General McCarthy heads the Operations Center, where he spent long hours through October carefully monitoring the Persian Gulf situation and watching for clues to Iraqi intentions. General McCarthy's job is to collect critical information and "get it to anyone who needs it in the Air Force." Indeed, he said, "if we don't have the information, we go out and get it."

In the Tank

The chief customer for that information is General Ralston because he is responsible for making sure that the Chief of Staff and the Air Force Secretary know everything they need to know as they discuss policy and operational options with the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the President. As deputy chief of staff for Plans and Operations, General Ralston is also the Air Force's operations emissary to the Joint Chiefs of Staff. He and "ops deps" from the other services work with the Joint Staff on any "jointness" issues that arise.

Working the "tank," as the windowless and highly secure joint meeting room is called, "is a serious responsibility and one you kind of have to put over and above all the other things going on," General Ralston observed.

General McCarthy's shop also contains Checkmate, the unit that goes to battle along with the operators and helps them map out how to fight an air war against any given opponent. "You tell us where the fight is and who it's with and what the battlefield is going to be like, and we'll tell you how to do it," General McCarthy said. His shop has a great deal to do with deciding the order of battle in an air campaign.

The complexity of the task—and the constant need to remain flexible and ready to adapt to new situations—was only too apparent one day last October when General McCarthy's people were weighing possible reactions to the fast-developing Persian Gulf situation. Saddam Hussein was giving some signals that he was withdrawing his troops from the south, where they had been menacing Kuwait. If the Republican Guard was indeed turning around to retreat northward, what was to be done with US forces that already were en route to southwest Asia?

"At what point do we stop the flow of airplanes?" General McCarthy asked rhetorically. "Where do we stop them, how long do we keep them stopped? You just don't turn around and go home."

Moreover, he said, "what do we want this situation to look like when we're done? Are we going to allow [Saddam Hussein] to continue doing this? If not, what do we do about it? These are policy questions. We don't decide, but we think about them."

Knowing His Place

General Ralston emphasizes that he has no desire to tell major operating commands how to discharge a particular mission. "I try to keep us in the policy and resource allocation business," General Ralston noted. For instance, he said, "I can relay instructions that ACC [Air Combat Command] is to provide an air package made up of active and Air Reserve Component forces and crews, but I don't want to tell Langley [AFB, Va., site of ACC headquarters] to do it with certain wings."

Unlike his counterparts in the other services, the Air Force's XO also manages the inception and budgeting of programs and operations. The XO's director for Operational Requirements works closely with the Air Force's major operational commands in development of all-important Mission Need Statements and operational requirements documents.

Brig. Gen. David J. McCloud—XOR, or Operational Requirements director—is responsible for managing the process by which hardware requirements are written and for trading off within the Air Force on what other solutions—cheaper or more effective—are available. General McCloud's organization is undergoing major change; where once it concentrated on specifying systems to meet needs, now it focuses on looking for solutions in other places.

General McCloud said that today the emphasis is on writing requirements documents carefully, in ways that don't needlessly tie the hands of the contractor or the acquisition community. In the past, he said, these documents were written in ways that essentially described a specific weapon system and therefore effectively ruled out any approach that was not obvious but quite possibly innovative and superior. That's a method, said General McCloud, that the Air Force "can no longer afford."

General McCloud's office is the focal point for Air Force dealings with the Joint Requirements Oversight Council (JROC), chaired by Adm. William A. Owens, vice chairman of the Joint Chiefs. The XOR directly supports the Air Force Vice Chief of Staff, Gen. Thomas S. Moorman, Jr., who represents the Air Force on the JROC.

Admiral Owens has strengthened and expanded the JROC to help the uniformed military leadership develop better decisions as to what systems are truly necessary. "The expansion of the JROC is forcing [all the services] to look hard at" each other's capabilities, General McCloud said. "We need to find the most effective way of doing business." That could mean increasing reliance on the capabilities of other armed services.

General McCloud said that about two-thirds of his time is spent dealing with the council and answering its questions. He also said that he will be forced to redefine just how to conduct his other mission—advocating Air Force operational concepts, needs, and requirements within the joint arena.

As the Air Force XO, General Ralston has many other roles that stem from law or Air Force tradition. He's also something of an ambassador for the Air Force on Capitol Hill because it's necessary that members of Congress and professional staff have a good working relationship with the Air Staff. "It's important that the first time they see me is not when we have a problem," General Ralston said.

Convincing Congress

When a legislative move looks like it could hurt the Air Force, it's General Ralston's job to go to Capitol Hill and try to win some relief for the service.

Last year, for example, Congress had been planning to "fence" money appropriated for bomber research and modifications to ensure that a mandated cost analysis actually got done. "I had no problem with doing the study," General Ralston said, "but it was not in the best interest of the country, in my view, to stop the B-2 Block 20, the B-52 conventional weapons upgrade, and the B-1 JDAM [Joint Direct Attack Munition] program while we did this thing."

After meeting with the staffs of relevant committees and making the Air Force's case, General Ralston was able to convince them to drop the spending ban. The provision was removed from the final budget bills.

Within XO, the challenge is that everything relates to everything else, said Maj. Gen. Robert E. Linhard, director of Plans. In his shop, XOX, General Linhard explained, "we tend to work the intellectual end of the problem." The planners try to anticipate crises and "make sure that the plans we laid down and our interpretation of national strategy is sound, then make sure our plans are upgraded regularly."

The office checks to make sure that the Air Force's contribution to the nation's war plans adds up and makes sense. If all has been done correctly, said General Linhard, XOX will have anticipated a situation—and its best solution—long before it happens. When it arrives, XOX's job is to "assist in the execution" of

the plan, either by providing planners or just providing backup support.

General Linhard's group also does "some technical planning for highly classified programs." This is in his area because it's important that "the linkages between the program and the operational requirements of the force are strong."

The XOX shop puts out or maintains an impressive list of documents, most of which relate to strategy and doctrine, but some of which relate to modernization. It also works with outside organizations like RAND Corp. to look into the far future—politically and technologically—and "provide context and objectives for the force planner."

General Linhard said he worries about problems like the RMA (revolution in military affairs) caused by an explosion of advanced technologies around the world and what impact it will have on the future Air Force. He watches and analyzes such global "megatrends" as information warfare, virtual reality, weapons of mass destruction, population growth, and so forth. He tries to "translate that so it will be clear and relevant to the force planner," so the force will be ready to face the challenge. Such trends have to be studied for the ways they might "change our basic doctrine," General Linhard said.

Such issues can't be looked at in a vacuum. "If all you're doing is looking at future technology, and how it can apply to weapon systems, then what you've got is a technology in search of a mission, rather than an Air Force for the future," General Linhard said.

Stretching the Forces

Because of his status as the top resources officer in the Air Force, General Ralston is a member of the Pentagon's Planning and Resources Board, which divides up the manpower, money, and facilities available for the armed forces.

Maj. Gen. John B. Sams, Jr., is XOF—the Forces director—and his job is to determine how, in an imperfect world, the Air Force must structure itself to deal with the threats it faces. It's not a "blue sky" operation. The XOF group must face the daily realities of supertight budgets and usually not enough forces to go around.

Last fall, General Sams's group was wrestling with the question of what to do about replacing the F-4G "Wild Weasel." Air Force plans call for phasing out the aircraft by 1997, but budgeteers have asked if it could be phased out sooner to save more money. There are alternatives—F-16s with the HARM targeting system or F-15s with a precision direction finding modification—and the costs associated with these options were being studied.

General Sams's deputy, Col. Norton A. Schwartz, asserted, "There are few good choices left. In most force structure issues . . . all the choices are suboptimal." In this situation, he said, XOF's job is to "preserve, whenever we can, the force commander's flexibility."

"Few decisions are final," he said, "and they're never final at this level." Ultimately, the Chief of Staff and the Secretary will have to choose what to do, but "we send things up with our best recommendation."

General Ralston has significant latitude on making such decisions, and the Chief of Staff and the Secretary count on him to make choices that don't need to come up to their level. For example, the General noted that in the Fiscal 1995 budget, a number of F-15s inadvertently got left off a list determining which aircraft would get an internal countermeasures set. "Clearly, the policy is that all of our F-15s ought to be equipped with jammers," said General Ralston, "so that was a decision I took upon myself to fix by taking the money from somewhere else."

He'll make such choices "if I'm comfortable that I know the Chief's philosophy" on a particular issue.

General Ralston is pleased with the addition of a directorate for Modeling, Simulation, and Analysis (XOM), headed by Brig. Gen. Frank B. Campbell. The XOM shop, created by Clinton Administration civilians in the Pentagon, is charged with developing predictive war games and virtual-reality applications that will fine-tune XO's ability to choose the best of a number of options. General Ralston said that the office has "amazing" capabilities.

Rounding out the roster of XO directors is Brig. Gen. Thomas J. Lennon, who is the Weather chief for the Air Force—XOW.

"Weather is a special case," General Ralston observed. "It's not only a staff function but a field operating agency."

Because the Weather chief not only provides weather support for all bases but also recruits and provides leadership for the weather service, manages weather satellites, and serves as the Air Force's point of contact with the Federal Aviation Administration and other federal agencies, "he belongs here," General Ralston said.

When the recent Persian Gulf crisis subsided, General Ralston soon was given a new Gulf-related task. He was told to identify and put together a package of near-, mid-, and long-term USAF forces that could be permanently stationed in the Gulf region to deter any further Iraqi adventurism. The analysis was requested by Army Gen. J. H. Binford Peay III, commander in chief of US Central Command, and routed through General Moorman, the Air Force vice chief of staff.

General Ralston received the request at 7:00 a.m. He was told that the answer was needed by noon the same day.

As it happens, the question didn't take XO totally by surprise; the director of Plans and the director of Forces actually had been working on this scenario. At 11:00 a.m., the final staff product was on General Ralston's desk. He looked it over, wrote in lengthy revisions by hand, and sent it off to be printed. He walked it down to Air Force leaders for their approval.

He beat the noon deadline. ■

Potential danger of Russian political turmoil threw the brakes on plans for deeper cuts in US strategic arms.

The New Nuclear Policy: Lead but Hedge

By Bill Gertz

THE PENTAGON's latest nuclear review has produced a new, two-track approach to strategic forces. First, the United States will make a modest new cut in weaponry. Second, it will greatly slow the overall arms-reduction process and even preserve the option of launching a future buildup.

On the latter score, the US will retain a capability "to return to a more robust nuclear posture," declared Deputy Defense Secretary John M. Deutch, the Pentagon's second-highest-ranking official.

In Defense Department shorthand, the new policy is called "Lead but Hedge." This means Washington will use arms reductions to try to induce Russia to agree to additional cuts, but at the same time, it will maintain the ability to respond forcefully to a future strategic threat, should it emerge.

Defense Secretary William J. Perry said caution is needed because of "the small but real danger that reform in Russia might fail and a new government might arise hostile to the United States, still armed with 25,000 nuclear weapons."

Such were the conclusions of the Clinton Administration's Nuclear Posture Review, the product of ten months of DoD analysis and decision-making. The review, whose results DoD began releasing in September, was the first study of its kind since 1978, when the Pentagon rethought its nuclear policy in light of a massive Soviet arms buildup.

Under provisions of the 1993–94 NPR, which were adopted fully by President Clinton, existing force-structure goals were revised downward—but only to the general levels

Staff photo by Guy Aceto

already approved under existing arms-control treaties.

The real news is what did *not* change. The Pentagon review concluded that for the next decade at least, the United States will have to continue to operate its traditional "triad" of Air Force long-range bombers and intercontinental ballistic missiles and Navy undersea craft armed with submarine-launched ballistic missiles (SLBMs). That issue was contested within the Department of Defense for many months. Officials once planned to eliminate as many as 150 Minuteman ICBMs but decided against doing so in the final stages of the review.

The NPR reaffirmed a Bush Administration decision not to renew the arms-reduction talks with Moscow until the first two bilateral agreements have been carried out. The NPR made no apparent shift in the underlying concept of deterrence, retaining the option of "last resort" nuclear retaliation for an attack on the US homeland and ruling out a move to a "no first use" policy.

In the end, the Pentagon exercised caution. The parlous state of reform in the former Soviet empire—and the danger of a turn toward extreme nationalism—threw the brakes on plans for deeper and faster US reductions and for doing anything more than tinkering at the margins of the planned deterrent.

The Defense Department also expressed concern that Russia has not cut its forces nearly as far and as fast as the United States has. Pentagon officials disclosed that the United States has reduced its inventory of accountable strategic nuclear warheads from 8,800 to 6,000 since 1989. During the same period, they said, the Soviet and now Russian warhead count has dropped only from 10,000 to 9,000.

Ashton B. Carter, assistant secretary of defense for International Security Affairs, summed up the situation in these words: "We wanted to show leadership in . . . eliminating nuclear weapons, but we didn't want to presume the outcome of history not yet written."

Mr. Carter added that the framework of the NPR gives the United States and the military "a new rationale" for nuclear arms. "We still believe in nuclear weapons in the United States," said Mr. Carter. "We still believe in deterrence. We didn't erase all of that."

Starting From START

For the NPR, the point of departure on force structure was the Strategic Arms Reduction Talks process. Various phased force structures are based on the two START agreements that have been concluded to date.

The US and Soviet Union signed the START I treaty in July 1991. In May 1992, just after the Soviet Union broke apart, a protocol was signed by the four nuclear successor states—Russia, Ukraine, Kazakhstan, and Belarus—pledging them to observe terms of the treaty. START I enjoins each side to cut strategic nuclear delivery vehicles to 1,600 and accountable warheads to 6,000.

START II, signed in January 1993 but not yet ratified by either nation, calls for warheads to be reduced by 2003 to between 3,000 and 3,500, with no more than 1,750 on submarine-borne ballistic missiles. Multiple warheads would be removed from ICBMs but permitted atop submarine missiles. For the US, 1,250 nuclear weapons are to be carried aboard bombers, 320 of them aboard

USAF's twenty B-2 bombers, Air Force officials said.

In September, President Clinton approved the final outline of a new force structure that essentially accommodates the weapons cuts called for in the unratified START II accord. The outline became the basis for the Pentagon's Fiscal 1996 strategic force budget and revision of strategic war plans, some of which date to the 1970s. The primary weapon inventory, under the revised plans, will comprise the following:

- Some 450 to 500 single-warhead Minuteman III ICBMs, all modernized with new propulsion and guidance systems by the end of this decade. The final number will hinge, to a large extent, on which USAF bases survive this year's base closure actions.
- A fleet of fourteen *Ohio*-class strategic submarines fitted with a total of 336 D5 missiles and based at Kings Bay, Ga., and Bangor, Wash.
- Twenty modern B-2 Stealth bombers and sixty-six aging B-52 heavy bombers equipped with air-launched cruise missiles. All B-1B bombers would be assigned exclusively to long-range conventional missions.

The Navy was ordered to eliminate from its fleet over the next few years four *Ohio*-class strategic missile submarines. For its part, the Air Force has been told to retire a few more older B-52 bombers and perhaps a handful of Minuteman ICBMs.

US Strategic Nuclear Arsenal: Delivery Vehicles

Weapon type	START II (Bush Administration)	START II (After NPR)	Difference
B-1B long-range bomber	0	0	0
B-2A long-range bomber	20	20	0
B-52H long-range bomber	94	66	–28
LGM-30F Minuteman II ICBM	0	0	0
LGM-30G Minuteman III ICBM	500	450–500	0 to –50
LGM-118A Peacekeeper ICBM	0	0	0
C4 Trident 1 SLBM	192	0	–192
D5 Trident 2 SLBM	240	336	+ 96
Totals	**1,046**	**872–922**	**–124 to –174**

Note: Both the original START plan and the post-NPR plan called for the US to deploy a maximum of 3,500 accountable warheads on its launchers. The number of Navy ballistic missile submarines (SSBNs) will decline from eighteen under the original plan to fourteen under the new plan.

The ICBM Controversy

Throughout the proceedings of the NPR, some in the Pentagon and Congress argued vigorously for outright elimination of one or more of the three legs of the triad, with landbased missiles attracting the most negative attention. However, the move to eliminate the ICBM force was opposed by US Strategic Command, which has authority over American strategic planning.

Air Force Lt. Gen. Arlen D. Jameson, STRATCOM's deputy commander in chief, said the NPR, in fact, revalidated the basic requirement for a triad of overlapping forces. "That is something we at STRATCOM feel strongly about," he said.

One reason for caution in dealing with the triad, said officials, was that the status of US nuclear forces has changed dramatically since 1988. It has sustained major reductions and a halt to almost all nuclear modernization programs. The total active nuclear stockpile has been cut by fifty-nine percent and will be reduced a total of nearly eighty percent by 2003, according to publicly released NPR documents.

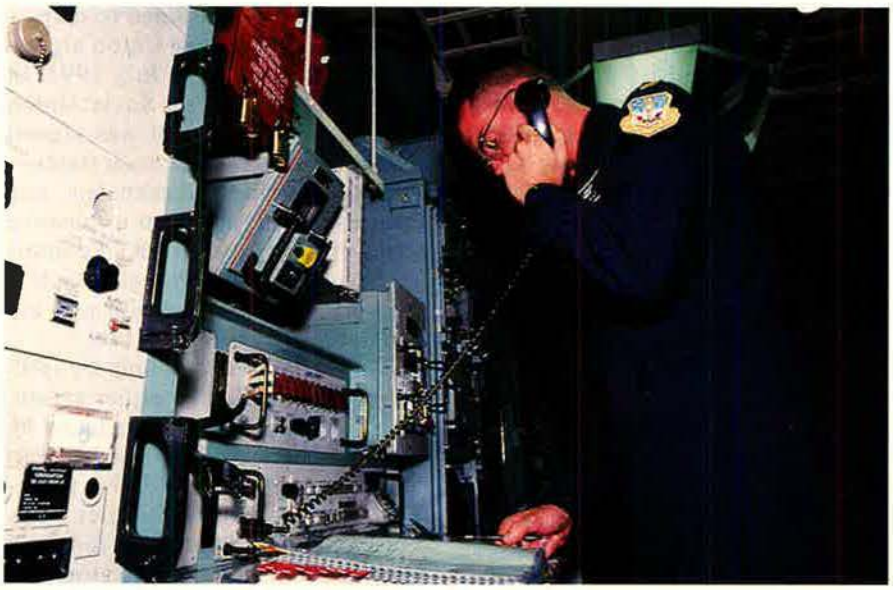
Strategic warheads have been cut by forty-seven percent and will be reduced by a total of more than seventy percent under START I and START II. In addition, US strategic bombers have been taken off twenty-four-hour alert, and nuclear weapons storage locations have been reduced by more than seventy-five percent.

The US force of ICBMs and SLBMs has been completely "detargeted" away from points in Russia and China. The Russians have reciprocated, but Chinese missiles are still believed to be aimed at US targets, according to the Pentagon. The US nuclear command post structure has been reduced, and airborne command-and-control operating tempos have been cut back.

The NPR made it clear that the Pentagon needs to be able to act on intelligence warnings of covert Russian nuclear activity or some failure to abide by warhead limits. In the Pentagon's view, the United States needs to maintain the option of halting the current reductions and perhaps build a larger force—for at least another ten years.

Speaking of the Russians, one

Staff photo by Guy Aceto



USAF missile alert crews can't close up shop yet. The latest nuclear review concluded that instability in Russia and potential threats from other adversaries mean nuclear weapons are still critical to US security.

Staff photos by Guy Aceto

The Pentagon's Fiscal 1996 strategic force budget and war plans, based on cuts called for in the unratified START II accord, call for twenty B-2 Stealth bombers (above) and sixty-six B-52s armed with cruise missiles (below).

Defense Department official stated flatly, "We might not want to carry out our arms-control obligations if they are brandishing nuclear weapons at us for political reasons."

Few at DoD believe that a major new period of tension between Moscow and Washington is inevitable or even likely. Even so, said Mr. Carter, "we felt we had to have a prudent plan we could carry out if it looked like this train [reform in Russia] was going to stall."

New Russian Weapon Systems

While US strategic force development is stagnant, Russia is pursuing development of three new strategic weapon systems.

According to Pentagon officials, Moscow is building a follow-on to the single-warhead, road-mobile, SS-25 ICBM. It is dubbed "Fat Boy" within US intelligence circles. A second version is being developed for silo basing, probably in existing SS-18 silos. Under START, all SS-18s are to be eliminated. The new ICBM is permitted under the treaty because of its single-warhead configuration. Flight tests are expected this year.

The third Russian missile under development is a submarine-launched ballistic missile to replace existing SLBMs.

During an NPR briefing for Russia's general staff in Moscow, US officials bluntly told the Russians that the future of their internal reform effort was so uncertain that "we are not quite sure where you're going."

Pentagon officials argue that the US needs to keep enough infrastructure to support the existing nuclear force and even expand it if a new threat emerges. To that end, the NPR calls for replacing the guidance systems and motors on Minuteman III missiles and for continuing production of the Navy's D5 missile. This will help fund those parts of the US defense industrial base necessary for missile guidance systems and reentry vehicle production and maintenance.

The Pentagon also levied a series of requirements on the Department of Energy. DoE and predecessor organizations have always manufactured nuclear warheads for the nation's strategic systems. Lately, however, the department has taken a strong anti–nuclear weapons posture under the stewardship of Energy Secretary Hazel O'Leary, raising serious questions about its ability to meet the Pentagon's future requirements.

The NPR called on DoE to maintain a nuclear weapons capability without resorting to underground nuclear tests. It also calls on the department to develop a "stockpile surveillance engineering base" and to show that it can prefabricate and certify the security of weapon types in the remaining stockpile. DoE also must maintain the capability to design, fabricate, and certify new warheads and to maintain the science and technology base, presumably by keeping open the Sandia, Los Alamos, and Lawrence Livermore National Laboratories.

A key requirement levied on DoE is to ensure adequate supplies of tritium, the crucial gas used in production of nuclear warheads. Plans call for "mining" tritium from available stocks for use in the active nuclear weapons stockpile. Experts estimate that tritium supplies for US weapons will be depleted by no later than 2015, absent construction of a multibillion-dollar tritium plant. Construction must begin by the late

Staff photo by Guy Aceto

As the Air Force retires more B-52s under the new force structure, these long-range bombers may have more company at the Aerospace Maintenance and Regeneration Center, Davis-Monthan AFB, Ariz.

1990s to meet the deadline. Mr. Deutch assured Congress in recent testimony that a new tritium plant would be built.

The NPR also called for continued acquisition of supporting intelligence systems, "which provide timely information and threat characterization warning indicators." Strategic command-and-control needs include continued funding of critical programs and addressing deficiencies in current communications and tactical warning and attack assessment systems, according to the documents.

Phony Hedges?

The Pentagon considers these steps key "hedges" in the new nuclear posture, but some critics say the review does not provide real hedges against present and future threats and is based on unrealistic assumptions about the course of the arms-control treaties.

Sven Kraemer, a conservative analyst who served on the National Security Council staff in Republican administrations, said political factors and international constraints would make it very difficult for the United States to beef up its nuclear forces once they have been reduced.

"The review suggests that multiple warheads offloaded under START can be reloaded [onto US weapons] if political developments warrant," Mr. Kraemer said. "The political reality is [that] this would be extraordinarily difficult."

To be sure, the United States has moved more rapidly than Russia to reduce its forces. According to a senior Pentagon official, "We have taken off combat status almost all the systems we were supposed to eliminate under START I." What prevents the US from undertaking more unilateral cuts is Russia's slow pace in deactivating its huge nuclear arsenal.

"My view is that they have not gone quite as fast as we have," Mr. Deutch told the House Foreign Affairs Committee. He attributed the disparity to technical and economic woes, not political recalcitrance.

Russian silo destruction is the key factor. Secretary Deutch said US intelligence agencies believe that Russia's overall record of deactivating or dismantling total systems is "at least uncertain." The process entails taking warheads off missiles, removing the missiles from their silos, and blowing up the extremely tough concrete-and-steel underground bunkers, Pentagon officials explained.

Large numbers of US nuclear forces counted under START I have had nuclear warheads removed or their alert status lowered. Later, US workers will come back, take the missiles out, and blow up the silos, one by one. This process will take years to complete, but at least the warheads no longer are threatening the Russian homeland.

The Russians, by contrast, have left the warhead-missile systems intact. They do not take the weapons down until they are ready to dismantle the whole complex and destroy the silo. As a result, much of the old Soviet nuclear force remains on alert.

Moscow has criticized the US deactivation procedure, charging that the United States has not blown up any silos and therefore has taken no irreversible steps.

"We've been fighting with them in a friendly dispute over this," said one Defense Department official. "We would prefer, in view of how many warheads could rain down on the United States, for them to take the warheads off."

The NPR focused on Russia but did not ignore other potential adversaries. It analyzed China's strategic forces, which are undergoing steady modernization expected to lead to Chinese acquisition of missiles equipped with multiple independently targetable reentry vehicles (MIRVs).

"The Chinese, even if they do MIRV, do not in our planning horizon present to us the kind of technical problem the Russian arsenal does, which is one of [US] system survivability," a Pentagon official said.

Secretary Perry, in a briefing on the NPR, asserted that nuclear weapons once had cost the US about $50 billion annually to operate and maintain but that figure had fallen to about $12 billion per year. The NPR concludes that such weapons are still critical to US security.

General Jameson said the NPR has produced policies that "walk a fine line" between arms reduction and force preservation. The force structure has no fat, he said, but it will be "adequate for us to carry out our responsibilities at this time. We believe this will be an adequate force level that provides us the flexibility that we need to deal with the real world uncertainties." ■

Bill Gertz covers national security for the Washington, D. C., Times. *His most recent article for* Air Force *Magazine, "What Next for Launchers?" appeared in the November 1994 issue.*

Verbatim

"Systemic" Readiness Woes

"Virtually every measure of readiness that has surfaced during this exercise seems to confirm [that US armed forces are in] the early stages of a long-term systemic readiness problem that is not confined to any one quarter of the fiscal year or portion of the force. The damaging effects of reduced readiness are being felt all year long, throughout the force, and in every service. . . . What is needed is urgent action with an eye to the long term to reverse the downward readiness spiral and to restore US military forces to the levels of preparedness necessary to effectively fulfill their mission."

Rep. Floyd D. Spence (R–S. C.), ranking Republican (now chairman) of the House Armed Services Committee, on December 5, 1994, in the introduction to "Military Readiness: The View From the Field," an extensive field study of the readiness of US military units.

Dangerous and Ill-Advised

"We are . . . troubled that the Department of Defense may be forced to cancel most, if not all, of its major modernization programs. . . . Maintaining the technological edge is essential to the ability of our military forces to prevail on the battlefields of the future. We believe that any decision to terminate or slow the development of these vital force modernization programs would be dangerously ill-advised."

Sens. John McCain (R-Ariz.) and John W. Warner (R-Va.) of the Senate Armed Services Committee, in a joint December 5, 1994, letter to President Clinton, urging him to raise the Pentagon budget and stop spending defense funds on certain nondefense items.

Warning From the Bear

"Russia is against the North Atlantic alliance expanding the sphere of its influence to the east, since then NATO's frontiers will approach the border of the Russian Federation. . . . We are against such huge, multinational, global organizations. We have only just stopped existing as two blocs, and we're on the point of going back into it. Of course, this is inadmissable and won't be effective in security questions."

Russian President Boris N. Yeltsin, in a December 5, 1994, statement in Moscow, quoted in the Washington* Times, *attacking NATO's decision to start formal discussions with prospective new members in eastern Europe.

Turbulence and Stress

"The drawdown has caused many service members to question their long-term commitment and the prospect of a full career. The turbulence of consolidations and base closures has disrupted assignments and family life. Fighter squadrons in Europe have been moved from one base to another and then immediately forward deployed to Turkey before families were settled. And a high operational tempo has put an extra strain on selected units. We are all aware of cases such as the heavy deployment rate for the AWACS. . . .

"One quick snapshot statistic. On September 30, 1994, the number of Air Force personnel deployed away from home units was four times higher than five years ago. . . . What was unusual five years ago has become the norm today."

William J. Perry, Secretary of Defense, at a November 10, 1994, press briefing concerning the launching of new quality-of-life programs for the troops.

Committed in the Gulf

"Our policy in the [Persian] Gulf is clear. We will not permit Iraq to enhance its capabilities below the 32d parallel. We won't permit Baghdad to intimidate the United Nations teams making sure that Iraq never again possesses weapons of mass destruction. The United States and the international community will not allow Baghdad to threaten its neighbors now or in the future. That is not our threat. That is our promise."

President Clinton, in October 28, 1994, remarks to US armed forces at Tactical Assembly Area Liberty, near Kuwait City.

Helms on Clinton . . .

"You ask an honest question. I'll give you an honest answer. No, I do not [believe that President Clinton has demonstrated an ability to command the US military]. And neither do the people in the armed forces."

Sen. Jesse Helms (R–N. C.) ranking Republican (now chairman) of the Senate Foreign Relations Committee, in November 19, 1994, remarks on CNN's "Evans and Novak" program.

. . . And Shalikashvili on Helms

"I was taken aback by [Helms's] implication that . . . somehow, the Joint Chiefs of Staff and I shared his view on President Clinton. Nothing could be further from the truth, and I think it's important . . . that this view not be represented as that of the military leadership or, for that matter, the view of the military as a whole."

***Gen. John M. Shalikashvili, Chairman of the Joint Chiefs of Staff, in a November 19, 1994, statement quoted in the New York* Times.**

The Second Guess

"This exploration [of arms proliferation] finds many military counterproliferation options to be risk-laden. Some may be infeasible. All seem unattractive, but inaction eventually could prove worse if adversaries unfriendly to the United States use the interim to deploy weapons of mass destruction. Thereafter they could employ previously unavailable powers to coerce US friends and, if war occurred, inflict unprecedented casualties on US and allied armed forces as well as civilians. The question then would become 'Why didn't US leaders take steps to prevent a catastrophe?' "

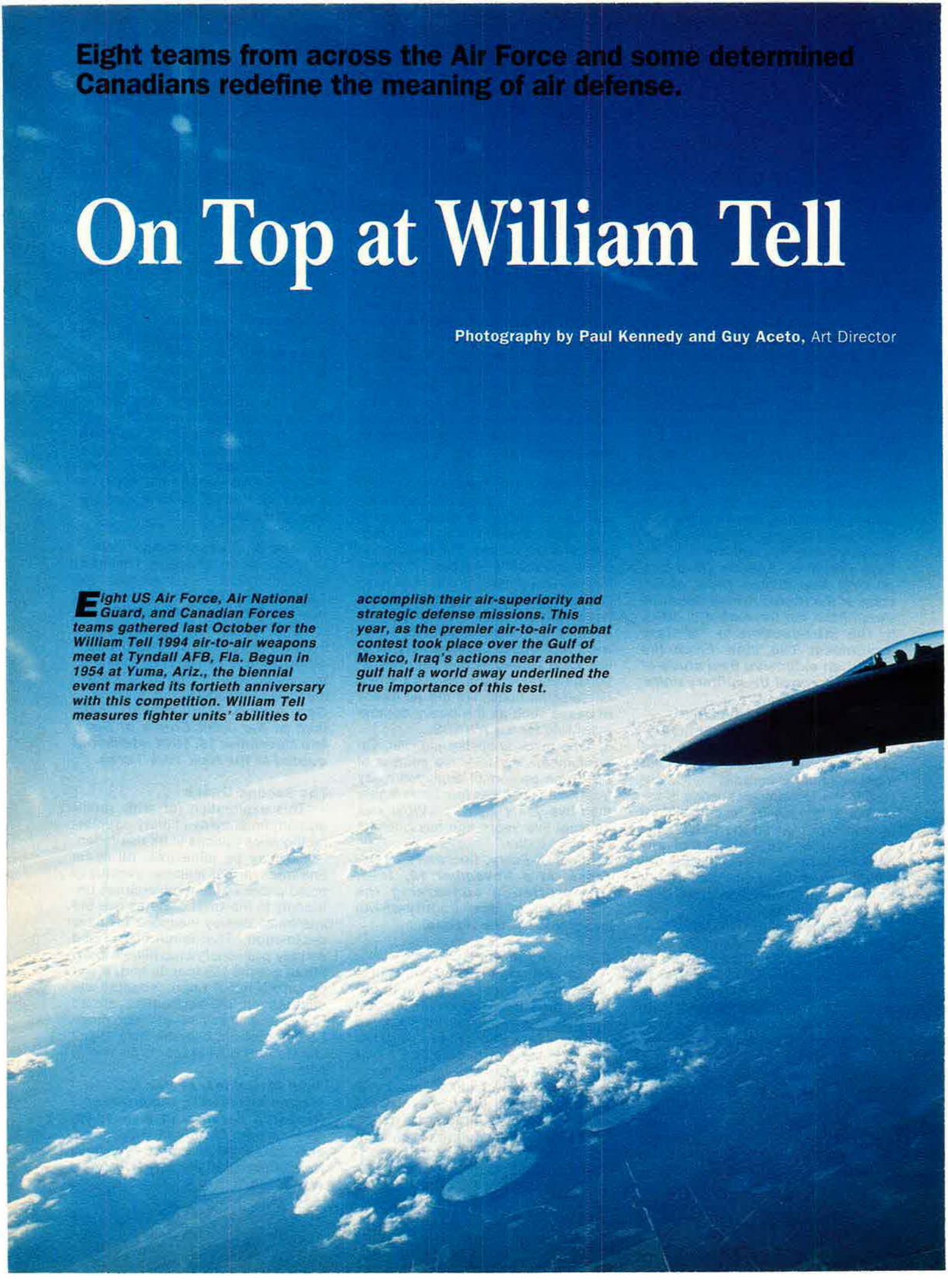
John M. Collins, senior specialist in national defense, Congressional Research Service, in a June 28, 1994, study, "Nuclear, Biological, and Chemical Weapon Proliferation: Potential Military Countermeasures." ■

Eight teams from across the Air Force and some determined Canadians redefine the meaning of air defense.

On Top at William Tell

Photography by Paul Kennedy and Guy Aceto, Art Director

Eight US Air Force, Air National Guard, and Canadian Forces teams gathered last October for the William Tell 1994 air-to-air weapons meet at Tyndall AFB, Fla. Begun in 1954 at Yuma, Ariz., the biennial event marked its fortieth anniversary with this competition. William Tell measures fighter units' abilities to accomplish their air-superiority and strategic defense missions. This year, as the premier air-to-air combat contest took place over the Gulf of Mexico, Iraq's actions near another gulf half a world away underlined the true importance of this test.



Staff photo by Guy Aceto

Staff photo by Guy Aceto

William Tell exemplifies "teamwork and excellence," said Maj. Gen. Carl E. Franklin, commander of the USAF Air Warfare Center, Eglin AFB, Fla., one of the host units for the meet. "The maintainer, the weapons loader, the controller, the shooter—it takes them all to put missiles on targets." At left is F-15 pilot Capt. Todd Williams from the 52d Fighter Wing, Spangdahlem AB, Germany.

Staff photos by Guy Aceto

For the weapons load profile, the 52d FW team attempted to arm an F-15 in fifty-three minutes. The team also had to complete an integrated combat turn within twenty-one minutes. The ICT calls for teams to conduct a battle-damage assessment, service fluids, and load missiles, ammunition, chaff, and flares. Spangdahlem had only one squadron of eighteen aircraft and a few more than 300 technicians from which to choose a William Tell team. Because Germany puts limits on airspeed and missions that fighters are allowed to fly, the 52d had to train at RAF Lakenheath, UK.

Photos by Paul Kennedy

The "Happy Hooligans" of the 119th Fighter Group (ANG), Fargo, N. D., took the Top Team Award. They showed their winning form in a dash for their aircraft during Profile IV competition (right), a timed air defense scramble to sort targets and shoot four bandits. Though it was the first time an F-16 unit earned the top score, the Hooligans have won William Tell four times. "We're expected to bring home the gold," said load competition team member SSgt. Shannon D. Johnson.

Photo by Paul Kennedy

For the ground control intercept category of competition, air weapons controllers at radar screens watched a grid of airspace to spot "bogies" for pilots. This year, the air weapons controllers used a state-of-the-art Range Control System (left). Installed at Tyndall in September, the system performed radar tracking, aircraft track fusion, and mission scheduling and support.

While waiting seven days for its turn to compete, the 158th FG (ANG) weapons load team from Burlington, Vt., resorted to mentally rehearsing procedures. It must have worked; in actual competition, the 158th's precision teamwork in the static load and integrated combat turn (above and right) earned a perfect score. This year, AIM-120 AMRAAMs (right) were used for the first time in Profile I competition.

Photos by Paul Kennedy

Top Team (50,000 Possible Points)

Unit	Location	Score
119th Fighter Group (ANG)	Fargo, N. D.	41,593
3d Wing (Team Canada)	CFB Bagotville, Quebec	40,993
158th FG (ANG)	Burlington,Vt.	40,846
18th Wing	Kadena AB, Japan	39,437
33d Fighter Wing	Eglin AFB, Fla.	38,089
52d FW	Spangdahlem AB, Germany	37,726
1st FW	Langley AFB, Va.	35,238
159th FG (ANG)	NAS New Orleans, La.	32,734

Profile I

(7,250 Possible Points)

Unit	Aircraft	Score
18th FW	F-15C	6,320
Canada	CF-18	6,102
119th FG	F-16A	5,877
33d FW	F-15C	5,820
52d FW	F-15C	5,735

Profile II

(6,250 Possible Points)

Unit	Aircraft	Score
Canada	CF-18	5,080
158th FG	F-16C	3,660
18th Wing	F-15C	3,657
1st FW	F-15C	2,944
33d FW	F-15C	2,903

Profile III

(17,250 Possible Points)

Unit	Aircraft	Score
18th Wing	F-15C	16,850
158th FG	F-16C	16,145
33d FW	F-15C	15,790
119th FG	F-16A	15,300
Canada	CF-18	14,930

Profile IV

(14,250 Possible Points)

Unit	Aircraft	Score
119th FG	F-16A	13,060
158th FG	F-16C	10,480
52d FW	F-15C	10,119
Canada	CF-18	10,105
1st FW	F-15C	9,425

Profile totals include operations, ground control intercept, and maintenance scores.

Weapons Director Team

(10,000 Possible Points)

Unit	Score
158th FG	9,575
119th FG	9,100
Canada	8,875
52d FW	8,650
18th Wing	8,575

Maintenance Team

(5,000 Possible Points)

Unit	Score
158th FG	4,945
119th FG	4,905
52d FW	4,854
159th FG	4,770
33d FW	4,755

Munitions Load Team

(5,000 Possible Points)

Unit	Score
158th FG	5,000
119th FG	4,950
1st FW	4,917
52d FW	4,915
Canada	4,876

Top Element (15,000 Possible Points)

Crew	Unit	Aircraft	Score
Capts. Marc Charpentier and François Garçeau	Canada	CF-18	12,219
Maj. Robert Edlund and Capt. Rick Gibney	119th FG	F-16A	12,037
Majs. Douglas Fick and Terry Moultroup	158th FG	F-16C	11,440
Capts. Scott Ruflin and John Sellers	18th Wing	F-15C	11,372
Capts. Jerry Kerby and James Huizenga	33d FW	F-15C	11,231

Top Scope (5,000 Possible Points)

Crew	Unit	Aircraft	Score
Capt. Scott Summers	158th FG	F-16C	4,925
Capt. Dan Talbot	119th FG	F-16A	4,700
Capt. Mark Matsushima	158th FG	F-16C	4,650
Capt. Fredrick Defranza	52d FW	F-15C	4,600
Capt. Shawn Duffy	Canada	CF-18	4,525

Top Gun (7,500 Possible Points)

Crew	Unit	Aircraft	Score
Capt. James Browne	52d FW	F-15C	6,346
Capt. François Garçeau	Canada	CF-18	6,292
Maj. Robert Edlund	119th FG	F-16A	6,114
Capt. Marc Charpentier	Canada	CF-18	5,927
Capt. Rick Gibney	119th FG	F-16A	5,923

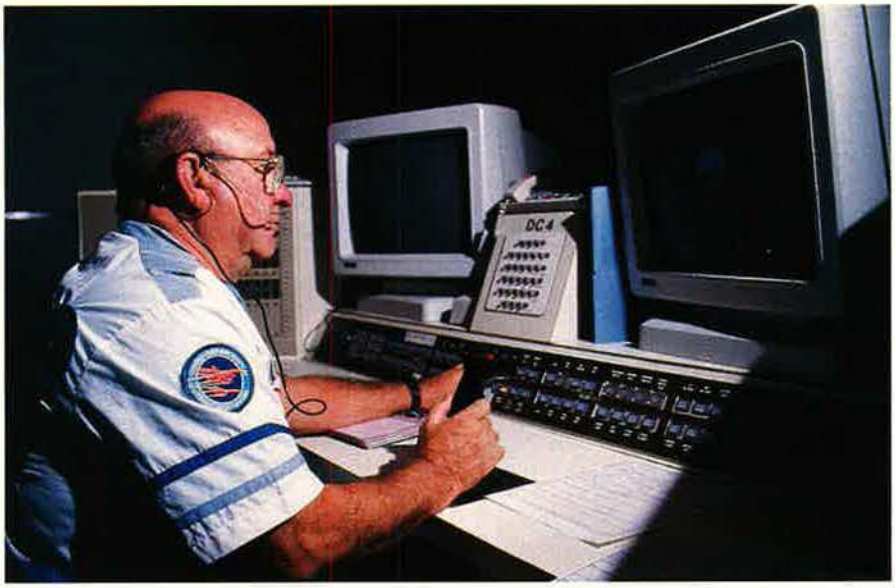
Top Shooter (1,250 Possible Points)

Crew	Unit	Aircraft	Score
Capt. Marc Charpentier	Canada	CF-18	1,088
Capt. Scott Ruflin	18th Wing	F-15C	1,027
Maj. Graham Sinclair	Canada	CF-18	1,000
Capt. Andrew Soundy	Canada	CF-18	1,000
Lt. Col. Mark Fredenburgh	158th FG	F-16C	934

Staff photos by Guy Aceto

Capt. Dave Early of the 95th Fighter Squadron heads off for another day's work at William Tell (top photo). Units from nearby Eglin AFB and the 475th Weapons Evaluation Group and 325th Fighter Wing from Tyndall AFB hosted the meet. Their planes acted as friendly aircraft to be sorted, towed aerial targets for the Profile I live gun firing, were bogies along with QF-106s, B-52s, and F-111s, and judged competition from the air.

Photo by Paul Kennedy



Every pilot fires a live missile during the competition—sometimes aimed at an unmanned drone piloted by Walt Wing (left) or another remote pilot. Members of the 82d Aerial Targets Squadron and their contractors launched about thirty MQM-107 drones during the meet. This year, two target drones in formation were used for the first time.

Staff photo by Guy Aceto

Photos by Paul Kennedy

The Canadians have participated in William Tell since 1965. In 1972, they won their first Top Gun award and were the overall winners in 1982. This year, because of budget constraints, they weren't even sure they could field a Team Canada. The 3d Wing, CFB Bagotville, Quebec, made it to William Tell, however, and earned more first-place finishes than any other team except the 158th FG.

Staff photo by Guy Aceto

Being intense competitors, fighter pilots even jockeyed for position on the ground. At the end of every day in the two-week meet (below), they gathered to check out the scores posted on the big board.

Photo by Paul Kennedy

Staff photo by Guy Aceto

Staff photo by Guy Aceto

The coveted Top Gun award went to a 52d FW F-15 pilot, Capt. James Browne (above), who edged out Canada's Capt. François Garçeau by fifty-four points. Commenting on William Tell as a test for top fighter teams and all phases of air defense, General Franklin said, "There's no better place to prepare for real combat than right here, honing a skill, firing live missiles against live targets. You can't beat that."

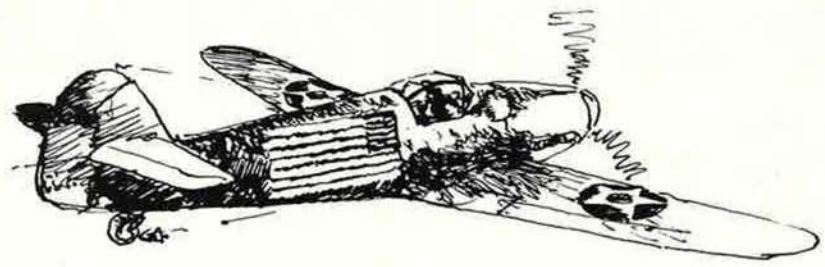
Photo by Paul Kennedy

Valor

By John L. Frisbee, Contributing Editor

Operation Gunn

Lt. Col. James A. Gunn gambled his life to ensure that POWs in Romania would be repatriated as the Germans withdrew.



AFTER the famous August 1943 low-level bombing of oil refineries at Ploesti, Romania, it was several months before Fifteenth Air Force in Italy attained a strength adequate for a sustained campaign against Ploesti while meeting its other commitments in southern and central Europe. Between April 5 and August 19, 1944, Fifteenth Air Force's heavy bombers hit Ploesti nineteen times. Oil production in that complex was reduced by an estimated eighty percent, but enemy defenses remained strong, downing 223 bombers and many fighters. Some 1,100 captured bomber and fighter crews became POWs in Romania.

On August 23, 1944, King Michael of Romania, whose country had joined Germany in 1940, surrendered to Soviet forces that had advanced into the country. In the next few days, one of the most unusual adventures of World War II took place.

It all began on August 17, when Fifteenth Air Force sent 248 bombers to Ploesti. Lt. Col. James A. Gunn, commander of the 454th Bomb Group, led his B-24s on that strike. Before bombs away, four of the eight planes in his lead squadron were shot down by flak. Gunn and all but one of his crew parachuted safely and were captured immediately by the Romanians.

After interrogation, Colonel Gunn was sent to the officers' prison in Bucharest, where he was the senior Allied officer. Although the POWs were not harmed physically, living conditions in the prison were appalling.

As news of the surrender spread, Romanian prison guards vanished, leaving the gates open. Gunn's first task was to keep the POWs from vanishing into the city and surrounding countryside until arrangements for their repatriation could be made. It was some time before he could find anyone with authority. The retreating Germans had begun reprisal bombing of Bucharest, which added to the general terror at the prospect of Soviet occupation.

Colonel Gunn finally located several senior Romanian officials who agreed to move the POWs to a safer location and to fly him to Italy (there were no functioning radio or wire facilities in Romania) so he could contact Fifteenth Air Force about evacuating the POWs. In return, Gunn agreed to arrange for Fifteenth Air Force to attack the fields from which the Germans were bombing the city and to convey a request that Romania be occupied by either the British or the Americans.

True to their word, the Romanians arranged a flight to Italy in an ancient twin-engine aircraft. Twenty minutes out, the Romanian pilot turned back, claiming engine trouble. On landing, Gunn was approached by Capt. Constantine Cantacuzino, who offered to fly him to Italy in the belly of a Bf-109. Captain Cantacuzino was commander of a Romanian fighter group that had been flying for the Luftwaffe. He also was Romania's leading ace and a member of the royal family. The risk of this venture was not slight. If they were downed by German or American fighters or by flak, or had engine failure, it would be curtains for Gunn, locked in the aft fuselage of the Bf-109.

There were no maps of Italy available, so Gunn drew from memory a map of the southeast coast of the country and an approach chart for his home base at San Giovanni Airfield. He wanted Captain Cantacuzino to fly on the deck to avoid German radar, but the Romanian, who did not have complete confidence in his engine, held out for 19,000 feet, which would test Gunn's tolerance to cold and lack of oxygen.

As an added precaution, they had a large American flag painted on both sides of the fuselage. While that was being done, Cantacuzino drew Gunn aside and told him their plan to take off early the next morning had become widely known and might be compromised. As soon as the painting was finished, Cantacuzino produced heavy flying gear for Gunn, stuffed him through an eighteen-inch-square access door into the fuselage (from which the radio had been removed), locked the door, and took off at 5:20 p.m. on August 27. The two-hour flight was completed without incident, though the Bf-109's engine began to run rough over the Adriatic.

The two men were immediately driven to Fifteenth Air Force headquarters at Bari. Planning began that night for strikes on the German airfield near Bucharest and for evacuation of the POWs in quickly modified B-17s. The plan was designated Operation Gunn. By September 3, 1,161 Allied prisoners of war had been flown out of Romania. Colonel Gunn had gambled his life and won—as had the POWs. Sadly, Romania was to remain under brutal Soviet control for the next forty-five years.

Jim Gunn retired from the Air Force as a colonel in 1967 and now lives in San Antonio, Tex., where he heads a real estate business and is active in civic affairs. ■

Thanks to Lt. Col. Bob Goebel, USAF (Ret.), who told us about this story, and to Colonel Gunn for providing many details.

An AFA task force says it's time to decide "Who's in charge?" and other pressing questions.

Facing Up to Space

This article is adapted from a report of the Air Force Association Advisory Group on Military Roles and Missions. Principal authors were Gen. Russell E. Dougherty, USAF (Ret.), Gen. Charles A. Gabriel, USAF (Ret.), Gen. Michael J. Dugan, USAF (Ret.), Gen. William V. McBride, USAF (Ret.), Gen. Robert T. Marsh, USAF (Ret.), and Maj. Gen. John R. Alison, USAF (Ret.).

WHO IS in charge of US space activities? The four-star commander of US Space Command (USSPACECOM) and Air Force Space Command (AFSPC), right?

Certainly not. Other government agencies—the National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, the Central Intelligence Agency, and the Departments of Commerce, Interior, and Transportation, to name some—own big chunks of the space program.

But isn't this officer in charge of the *military* space program? Again, the answer is no. The Defense Intelligence Agency, Defense Information Systems Agency (DISA), Advanced Research Projects Agency (ARPA), Ballistic Missile Defense Organization (BMDO), Army, and Navy all claim pieces of that pie.

Even within USAF itself, the four-star AFSPC commander does not have the final say on space. Critical portions of the service's space activities are controlled by officials in Air Force Materiel Command and the National Reconnaissance Office (NRO).

Fragmented leadership is the most prominent feature of American space activities. It is not the only challenge facing the US space program, but it is the fundamental problem that lies at the root of most others. Duplication of responsibility is pervasive throughout the nation's space activities. It surfaces in every examination of space capabilities, and it stymies every effort to improve US space operations.

The prime example of the problems caused by divided authority concerns launchers. During a decade of indecision, the US has spent hundreds of millions of dollars on various programs but has produced little more than a string of program corpses—the Advanced Launch Sys-

tem, the National Launch Vehicle, and Spacelifter, all of which became victims of a lack of consensus among the nation's space organizations.

Intramural squabbles killed the Follow-On Early Warning System satellite—a program that the Commander in Chief of USSPACECOM, Gen. Charles A. Horner, described in October 1993 as his first priority. Similar discord continues to threaten the existence of the Milstar program.

Constraints on budgets and resources lend new emphasis to calls for decision and action by the Department of Defense, Administration, and Congress to rationalize and streamline US space operations. The Air Force Association urges attention to these critical issues and proposes actions essential to achieving more affordable space support for combat forces.

Falling Short

The United States is the world leader in military space programs. Still, it comes nowhere close to achieving its full potential in space. Military forces have discovered that space is an irreplaceable part of the capability required to fight and win regional conflicts expected in the years ahead.

However, unless the nation confronts and solves its organizational problems, we will not maintain our advantage. Even more dangerous, we will not achieve future capabilities. We are not facing up squarely to any of these problems.

There is little to be gained by arguing the need for increased space budgets. Rather, we must look toward achieving improved efficiency by eliminating areas of duplication and redundancy, for example. This is the rationale behind most of the calls for the reorganization of space responsibilities. At present, the Army, Navy, and Air Force all operate service space commands (though the Air Force is the only service operating across the spectrum of space functions—research and development, production, launch, on-orbit command and control, and ground stations). All services perform R&D and acquire user equipment for their forces—and, of growing importance, all services integrate spacebased systems into their forces.

The combat commanders in chief have no assigned space resources, although space expertise may reside in their staffs and they may host a USSPACECOM team to help integrate space capabilities into the planning and execution processes. Their component air commands may have similar teams of space experts assigned from AFSPC.

The United States space community comprises four separate sectors: defense, intelligence, civil, and commercial. Each sector has its own missions and purposes for space, but all share the need for launch systems and the means of controlling satellites—though their concerns in those areas differ. For example, the military sector's prime requirement is to have a responsive, operational launch capability in the medium-lift range; the intelligence community's top concern is reliability of heavy-lift vehicles; the civil sector's concern is manned spaceflight and reduced shuttle operations costs; and the commercial sector is concerned with reducing the cost of launch services, especially to geosynchronous orbit for communications satellites. The missions of the four sectors also tend to overlap—particularly in communications and remote sensing.

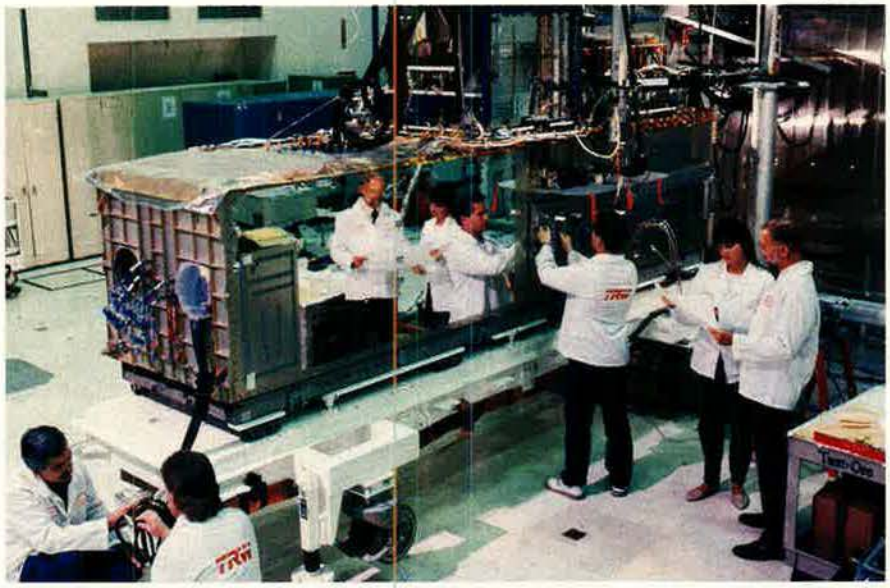
Overlaps, Redundancies, Duplications

In the national security arena, the defense and intelligence space program is fraught with mission overlaps, redundancies, and duplications. Several services are developing space hardware that might be service-unique only in the sense that the services use different frequencies. The Air Force performs most launch activities, but BMDO, ARPA, and the Navy all contract with commercial companies and NASA for some of their launch activities. The Navy's Transit system is launched by NASA, while its UHF Follow-On satellite is launched commercially. NRO, which provides R&D and acquisition of intelligence satellites, relies on the Air Force for launch services.

Duplication is especially apparent in military communications satellites. The Air Force operates the Defense Satellite Communications System (DSCS), the Air Force satellite communications system (AFSATCOM), and Milstar; the Army shares some operation of DSCS; the Navy operates the Fleet Satellite Communications System, the Fleet EHF package, and the UHF Follow-On. DISA manages DSCS.

The interests of other US military services in the availability of space data—in forms and systems that are useful for their purposes—are obvious and must be recognized. Provision must be made to accommodate these interests, in particular requirements for space control and operations. However, duplication in acquisition is another matter, potentially wasteful and unnecessary. Acquisition of space systems is a fruitful and proper area for consolidation under the Air Force acquisition system.

The Air Force already carries out most national security space operations. The range of spacebased capabilities designed to serve the combat CINCs and all the services is provided by the Air Force. The Defense Support Program missile launch warning satellite system, various communications platforms, nuclear detection capability, the Global Positioning System (GPS), the Defense Meteorological Satellite Program, and other space systems are procured, launched, and controlled by the Air Force to meet multiservice and joint-force needs. Through Air Force Materiel Command's Space and Missile Systems Center, the Air Force provides R&D, launch, and other support to NRO's programs.



With many agencies involved in the military space program, roles overlap. This is especially apparent in military communications satellites, such as Milstar, whose communications payload is being worked on here by TRW technicians.

As space systems become even more critical to modern combat capability—and as off-board sensor data are integrated into weapon systems capability—another aspect of the organizational problem moves to the forefront: generating space system requirements. The special capabilities of national systems operated within the intelligence community are essential to success on the information battlefield and to fielding the new capabilities demonstrated in the services' TENCAP (Tactical Exploitation of National Capabilities) programs. A robust "sensor-to-shooter" information flow is the key to these new capabilities, and getting this flow will require integrating national systems with the GPS, other reconnaissance platforms, the E-8 Joint STARS sensor, and other electronic warfare assets.

Inaccessible to the Military

Many decisions on the use of national systems are made by national intelligence councils that are not within the defense requirements process. The requirements of theater commanders in chief and the services may not be addressed within the design and development of national systems. The process itself is largely outside their normal channels and perceived to be inaccessible to military planners.

Military concerns also extend to the availability of the data stream for immediate operational use. Downlinking the data directly to the theater commander is one problem; the US military made much progress on this during Operation Desert Storm and has continued to do so. Making essential parts of that data stream directly available in the cockpit of a combat aircraft or to a tank commander is far more difficult. The reluctance of the intelligence community to provide a real-time sensor-to-shooter data stream—without centralized control and analysis—is a tough organizational problem.

The services' space commands seek freer access to the national systems requirements process by collecting the national systems requirements of their services and forwarding them to USSPACECOM. CINCSPACE can then integrate those requirements and provide them to the vice chairman of the Joint Chiefs of Staff, who has access to defense and intelligence requirements processes.

It is still unclear exactly how combat commanders would achieve the priority needed on national systems when combat capability is on the line. The development of a new generation of defense-suppression capability—in which fighters would launch High-Speed Antiradiation Missiles from outside enemy radar

coverage—would require firm assurances that pilots would always have access to certain critical data generated by national systems.

Turf Battles

Discussion of solutions to the organizational problem has too frequently degenerated into charges that the Air Force is engaged in a "power grab," allegations that the Air Force is not responsive to the operational needs of the other services, and fairly emotional turf-protecting arguments. The real standard for decision-making is whether a different organization offers opportunities for increased efficiency, reduced cost, and expanded combat capability. The Air Force's experience in space makes it the service of choice for any decision to lodge the executive responsibility for development and acquisition of military space systems.

Recognition of the extent of the Air Force's role in space today and the logic of consolidating military space R&D and acquisition in the Air Force have to date been the victims of turf arguments of the other services. Such recognition is not wrong, but it has been perceived by the other services as denying them essential access to space systems. That need not happen. Accommodation can (and should) be made to protect legitimate service interests without duplicating organizational structures.

The real questions: How do we eliminate duplication and reduce costs? How do we accommodate personnel reductions in the space arena? Where are the expertise, capability, and commitment needed to lead the effort to gain the tremendous combat capability advantages offered by space? The solution lies in vesting R&D and acquisition functions for the military space requirements of all services in the Air Force.

Clearly, each service has a role in developing concepts and systems to integrate the data stream from space to improve combat capability. Each service has a role in developing requirements for space systems that are required to support its service-unique weapon systems. Each service has a role in advocating the use of space systems, and space-collected or space-transmitted data for operational land, air, and naval expertise are essential to all phases of systems development and force application.

But do all services need to acquire, develop, launch, control, and operate space systems in order to integrate the space-collected data stream effectively into their combat capability? Do we need such duplication—whether it is measured in dollars or numbers of personnel—to maintain duplicative capability? The answer is no.

The same questions must be asked of the intelligence community. Does it need to maintain organizational structures to launch, control, and operate satellites in order to use the data generated from those satellites?

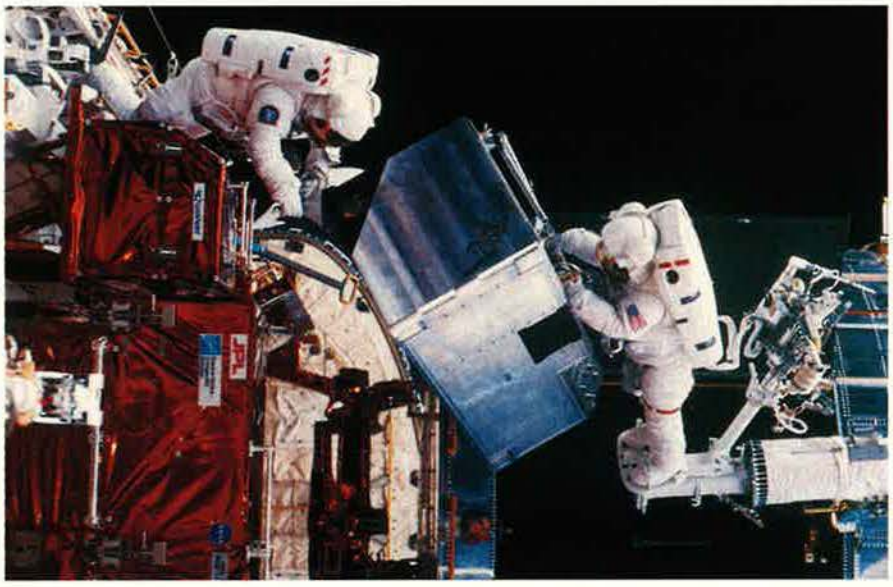
The issue is not whether the Army and Navy have valid interests in space. They do, but it is AFA's belief that costly, duplicative functions—particularly acquisition functions—should be consolidated within the larger Air Force acquisition system. Savings can be achieved by combining the Navy's satellite control operations with the Air Force Satellite Control Network. The same is true for national assets. AFSCN and AFSPC can provide appropriate links to the intelligence community and security requirements organizations.

All space system R&D and acquisition should be consolidated within the Air Force, as required by the Fiscal 1994 House-Senate conference report on defense appropriations. Joint program offices—a proven and accepted method of seeing that joint programs meet multiservice needs—should be used to ensure that Army, Navy, and intelligence requirements are met in future systems. The Joint Requirements Oversight Council (JROC) process ensures complete integration of other services' requirements. Once JROC has validated and integrated such requirements, service funds should be apportioned and allocated by the Office of the Secretary of Defense to cover other services' systems costs.

Army, Navy, and Air Force components of USSPACECOM need to participate in the expression of service space requirements and the R&D and acquisition processes through USSPACECOM and the joint program offices. They would assist in the development and introduction of service-specific equipment required to integrate space systems into their combat capabilities and to integrate it into the overall USSPACECOM inventory of assets.

Evolution, not Revolution

This does not represent a revolutionary reorganization, nor does it significantly alter the current roles and missions of the services. Rather, it represents the normal evolution of an efficient military space organization. Costs are too high and space capabilities too important to accommodate single-service space systems. Evolving capabilities are joint in



Space systems, particularly those operated by the intelligence community, are critical to success on the modern battlefield, but military requirements may not be addressed in the design and development of national systems.

The world's largest reflector telescope—the Keck telescope in Hawaii—keeps an eye on the stars, but who's in charge of US military space activities? An AFA task force points out that USAF is already in a de facto leadership position.

nature, and the Air Force can provide launch and on-orbit control of defense satellite systems.

The Navy's Transit system is scheduled for deactivation in 1996 and will be replaced by the capabilities of the GPS constellation of satellites. Service-specific satellite communication systems are to be replaced by Milstar. The operational control of space forces would remain with CINCSPACE, but AFSPC would operate the systems under CINCSPACE's operational control.

Since June 1992, the Air Force mission statement has placed space on the same level as the aviation elements of the mission. Air Force leaders have made it clear that they believe the Air Force should be the nation's military space leader.

The Air Force already is in a *de facto* leadership position within the Department of Defense. The Air Force budget includes ninety-one percent of the Pentagon's overall space budget—about $13.5 billion in the President's Fiscal 1994 budget.

The Air Force operates the majority of the nation's satellite systems, has more than ninety percent of DoD's personnel dedicated to space, is the only service that includes space within its mission statement, and has DoD's only organic orbital launch force.

Along with leadership in the military space program comes a set of additional responsibilities for USAF. Chief among them is demonstrating an unequivocal commitment to exploiting space for all forces and meeting the needs of the other services. This is easier said than done when budgets are low. The costs of launch systems and satellites compete directly with other USAF requirements, such as fighters, bombers, and airlifters. Perceptions already exist that the space system needs of combat CINCs and other services will never compete well against Air Force requirements for new aircraft. Executive responsibility for overall space acquisition and for satisfying all services' space requirements carries with it an obligation to dispel this perception—and the JROC process should ensure that balanced budget allocations are made.

The Allocation Problem

The real problem is one of allocation. When space requirements—today's and tomorrow's—are so expensive, any single service's budget is hard pressed. That is the case with the Air Force today. Even though Air Force leaders understand and appreciate the importance of maintaining investment in space systems, they must balance that against the equally important requirement to be able to deploy needed combat platforms. This is not the case in the other services: The costs of GPS and Milstar, which have been paid by the Air Force, do not compete with those of *Nimitz*-class aircraft carriers, M1A2 tanks, or other ground and naval systems.

In effect, a major portion of the Air Force budget—the space slice—supports all of the armed services and joint forces. Unlike military airlift, operated by the Air Force to support all services and CINCs, there is no industrial service fund to spread the cost of space systems among their many military users.

This issue lies at the root of many problems with achieving effective and equitable funding and support for space systems. The most feasible solution would be recurring JROC examinations of acquisition and sustaining requirements plus a formal arrangement (such as the Joint Space Management Board under consideration by DoD) to recommend proper and balanced apportionment and budgetary distribution so that major investments in acquisition and management of space systems to fulfill joint or single-service requirements are recognized in funding allocations.

This suggests that better allocation of Pentagon resources is required to meet important and growing space needs—joint and service-unique. AFA believes that this is the right solution because it focuses support from the senior levels to balance the requirements and the acquisition process of DoD as well as the operational support for joint programs. It uses an authoritative, existing process to enable the Air Force to make the most effective use of limited resources available in support of the entire DoD responsibility in space.

In summary, three steps are essential to achieving more affordable space support for combat forces:

- Development of new, responsive launch technology—an issue that is truly national in scope and requires national leadership to achieve consensus among all interested agencies.
- Consolidation of all space acquisition functions in the Air Force through development of the five-year plan mandated by the congressional appropriations report and identification of the Secretary of the Air Force as Executive Agent for all DoD space programs, acquisition, and R&D.
- Use of available joint processes of the services and DoD to provide appropriate fiscal guidance that enables the Air Force to make effective use of limited resources for maximum support of joint combat capability. ■

It's Only a Prop

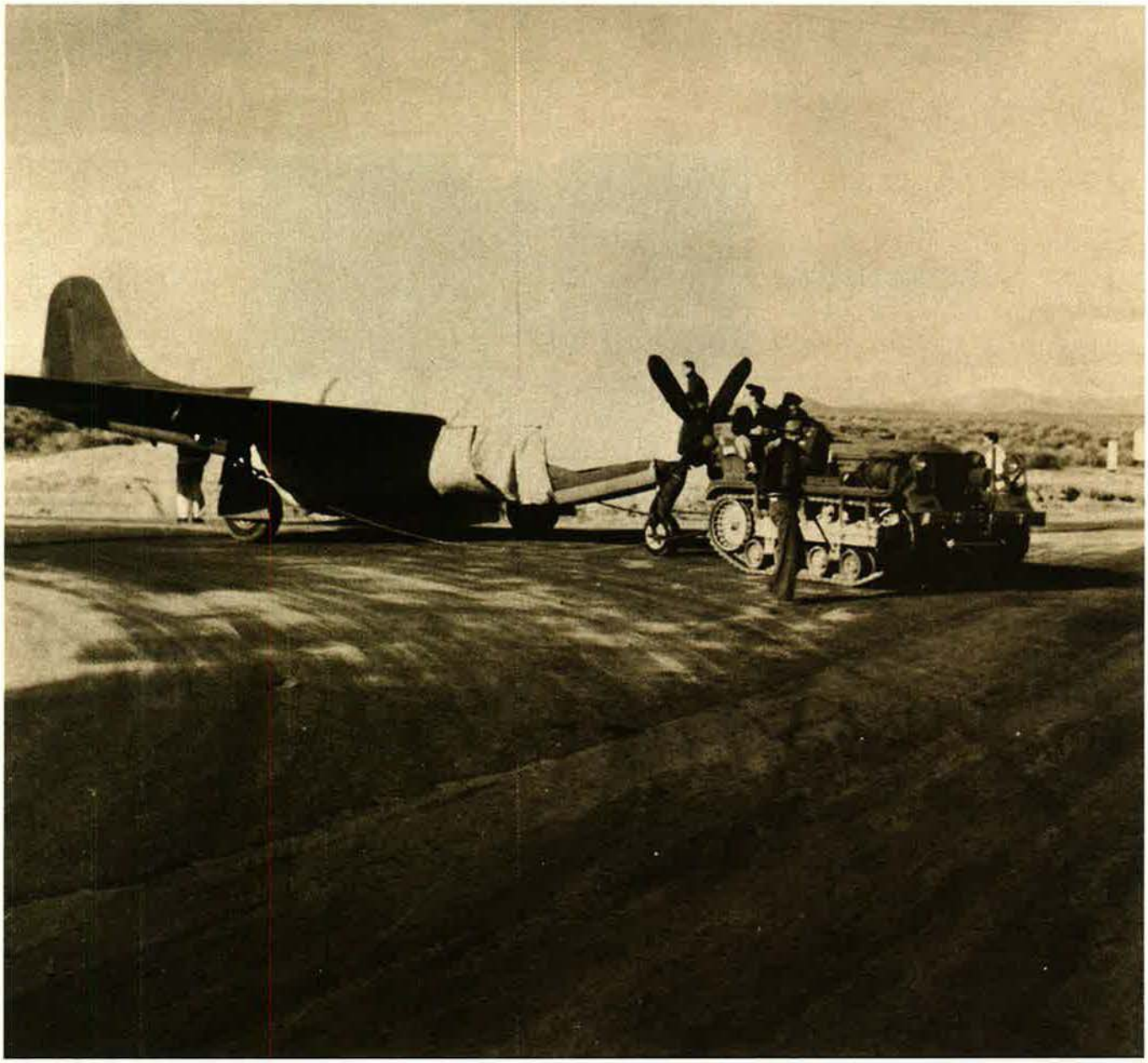


Photo courtesy C. V. Glines

Maj. Gen. Henry H. "Hap" Arnold saw the turbojet engine of British designer Frank Whittle in April 1941 and knew immediately that the US needed a jet aircraft. With no time for original research, General Electric copied and improved the Whittle engine, and Bell Aircraft designed and built the airframe. Because of wartime secrecy, the first US jet aircraft received the designation of a canceled Bell fighter XP-59 and became the Bell XP-59A. A dummy propeller and shrouded air intakes and fuselage also helped keep the secret as the plane was towed along desert roads to its first flight in October 1942 at Muroc AAB, Calif.

Each time US military forces respond to a crisis, Air Mobility Command swings into action.

Airlift at High Tempo

By James Kitfield

USAF photo by TSgt. Frank Ogilanic

An increasing number of deployments places heavy demands on AMC's C-141s and C-5s. Even the C-17 was pressed into its first contingency duty when Iraq moved toward Kuwait in October. At left, SSgt. Joe Maxey, 17th Airlift Squadron, Charleston AFB, S. C., prepares a Globemaster III for loading.

To THE untrained eye, this runway was just another basic slab of asphalt bordered by weeds and rusted hulks of abandoned vehicles and equipment. For certain specialists with USAF's Air Mobility Command, however, the strip at Haiti's dilapidated international airport on the outskirts of Port-au-Prince was the latest stop on an extraordinary world tour.

Aircrews and support personnel from more than a dozen AMC units congregated once again, this time to take part in Operation Restore Democracy.

TSgt. Joe Stigers, an air cargo supervisor for the 436th Tanker Airlift Control Element (TALCE), had recently seen many of the same Americans. They were together in Suriname for Operation Distant Haven, where they had helped build camps for Haitian refugees.

"In the past year and a half," said Sergeant Stigers, "I've also been to Kenya three times in support of [Operation Restore Hope in] Somalia and to Nairobi to start up relief operations for Rwanda. I've had the same immunization shot on the same sore spot something like ten times."

Capt. Tom Thompson commands a 101-person aerial port unit attached to the 436th TALCE, which is in charge of airport operations. His men keep a crude chart of the cargo they have downloaded in Haiti. In slightly more than a week, they had processed 2,834 aircraft and more than 10,000 passengers.

Sitting around on a rare break, Captain Thompson's men swapped stories about recent deployments. The luckiest ones were just back from Europe, where they were helping load relief supplies bound for Africa and sleeping in hotels with clean sheets. Others had recently returned from "Nam," as they were already calling Suriname, the small former Dutch colony on the north coast of South America.

There was agreement by acclamation that the stint in Goma, Zaire, was the worst. No one will forget the misery on the road to Rwanda. "Now we're all kind of hoping for a break," conceded Captain Thompson, who spent three months earlier this year in Mombasa, Kenya. "Our families are getting a little tired of us being away."

Col. Tim Kaufman, operations group commander of the 436th Airlift Wing, Dover AFB, Del.—whose units are in charge of the TALCE at the Haitian capital—knows that his troops are walking that fine line between being actively employed in work they love and burning out from overwork. Some of his aircrews received only twelve hours' notice for this operation. The turbulence of another unexpected crisis played havoc with family plans.

Some members of the TALCE have logged more than 200 days on temporary duty (TDY) in the past year, considerably more than AMC's standard 130 days annually.

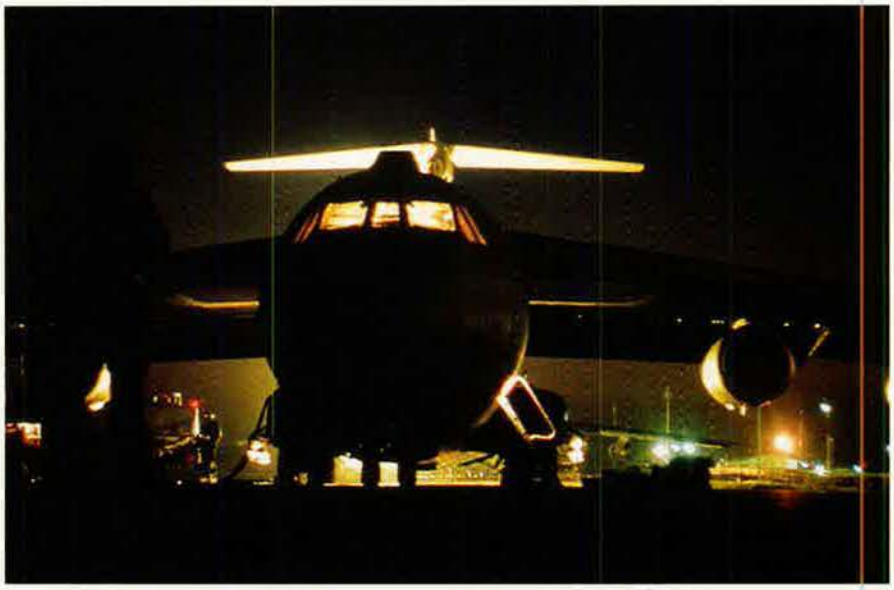
"We've had an awfully busy optempo for the past year and a half," said Colonel Kaufman, "and every time the pace starts to die down a little bit, something else crops up. It's gotten so that we're all sort of looking at the radar screen and wondering what's coming up next."

Vigilant Warrior

Before 436th AW units could return from Haiti, the next blip on the radar screen originated from southwest Asia. In October, Iraq's Republican Guard divisions moved menacingly southward toward the border with Kuwait. For an already tired AMC hoping to catch its breath, Saddam Hussein's gambit looked uncomfortably like the opening move of another marathon airlift operation.

Brig. Gen. Charles J. Wax, commander of AMC's Tanker Airlift Control Center at Scott AFB, Ill., sits at the command-and-control center of an air transportation network that spans the globe. Because he had been monitoring intelligence reports from forces involved in Operation Southern Watch in the Persian Gulf region, General Wax was not surprised when word came on October 7 to prepare to surge forces to southwest Asia.

As he contemplated the potential magnitude of the new operation and the heavy engagement of his forces in Haiti and elsewhere, General Wax concluded that he likely would have to take two steps that the command has avoided since the end of Operation Desert Shield. The first was activation of Stage I of the Civil Reserve Air Fleet, a move that would give AMC access to about nine percent of the US commercial air fleet's



USAF photo by TSgt. David McLeod

The backbone of the airlifter fleet is nearing the end of its service life. One-fourth of AMC's C-141s were grounded last year because of stress fractures, and spare parts are in short supply.

passenger capacity and twenty-one percent of its cargo capacity. The second step was to ask the national command authorities to activate some of AMC's Air National Guard and Air Force Reserve units.

"We consider those options during almost every crisis, but when you talk about an operation the size of Desert Shield, it's essential that we mobilize the commercial sector and reserve forces," said General Wax. He was relieved when, as October wore on and the Persian Gulf crisis subsided, word came that US Central Command had dramatically scaled back its initial request for reinforcing units and Operation Vigilant Warrior would not be carried out on a grand scale.

Even so, statistics for the planned operation were impressive. By November, AMC had flown 2,017 sorties, carried out 601 individual missions, delivered 11,665 passengers, and racked up twenty-nine million ton-miles in its flights. Between active-duty and commercially contracted aircrews, the operation required 10,862 hours of flight time in three weeks. Fully fifty percent of aircrews involved in Vigilant Warrior were Guard and Reserve crews that volunteered for duty.

"You could say we've been busy with a very high operations tempo, and there are certain sectors of the AMC community that are tired and need a rest," said General Wax, noting that the southwest Asia deployment was likely to delay the relief of the men and women in the TALCE units in Haiti. "But nearly any military response is going to require mobility forces, and that's what we're here for, not to park our aircraft on the ramp as a static display."

Changing USAF Mobility Assets

	1989 (MAC)	1994 (AMC)	Percent Change
Total population	88,598	65,614	–26%
C-141 pilots	1,199	842	–30%
C-5 pilots	342	439	+28%
C-141 navigators	161	124	–23%
C-5 navigators	5	13	+160%
C-141 flying hours	258,082	103,708	–60%
C-5 flying hours	49,541	58,204	+17%

Flying Hard

Precisely because air mobility forces continue to shoulder much of the burden of the worldwide deployment of US-based forces, Air Force leaders are anxiously monitoring the force for signs of stress. "Certainly I don't recall a time in my twenty-seven-year career when we have operated so long at such a very, very busy pace," said Brig. Gen. (Maj. Gen. selectee) John W. Handy, director of Operations and Logistics for US Transportation Command, collocated with AMC at Scott AFB.

General Handy noted that those contingencies came on top of routine sustainment "channels" that AMC flies regularly in support of forward-deployed forces and forces dispatched on overseas exercises. The nearly unprecedented pace of operations in late 1994, he said, has forced AMC to delay or suspend many of these lower-priority air movements around the globe.

"We continue to fly our aircraft very hard, and that has a tremendous impact on both your people and your equipment," he said.

That impact can be clearly seen in the usage rates of spare parts. Responding to questions from Sen. John McCain (R-Ariz.) last summer, Gen. Merrill A. McPeak, then the Air Force Chief of Staff, noted declining fill rates for C-141 and C-5 readiness spares packages.

"Due to the constant high use of our fleet and unplanned overfly during the last three years for contingency and humanitarian support, we've put a lot of stress both on our [C-141 and C-5] aircraft [and on] our spare parts systems," General McPeak said. "We've been working the parts issue hard and have started to make progress.

"However, if we continue to fly at the levels we have over the last three years, we will continue to have some [spare parts] shortages. Our ability to sustain our systems could be impacted."

Compounding the problems caused by spares shortages is the difficulty caused by the age of AMC's fleet. While the command relies as much as possible on civilian contractors to move troops and some standard cargo, only its fleet of dedicated military airlifters is capable of moving

outsize equipment, such as tanks and trucks, and taking on fuel during flight.

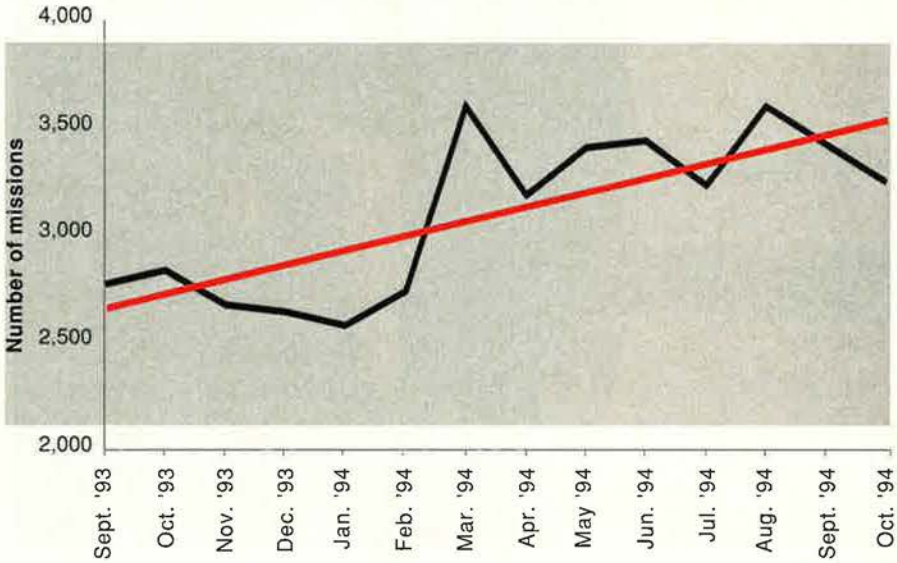
C-141 Problems

Of particular concern are AMC's more than 200 C-141 aircraft, the transports that form the backbone of the airlifter fleet. The C-141 is nearing the end of its projected service life. An inspection last year found stress fractures in the wings of many aircraft. A quarter of the fleet was subsequently grounded and the rest put on flight restrictions. Other problems have also been detected.

The Air Force plan called for repairing and redeploying the C-141 fleet in December. The experience of recent years has convinced the Air Force that the cost of a proposed Service Life Extension Program for the C-141 would prove prohibitive, increasing the urgency of replacing the transport. Air Force statistics show that per aircraft, C-141s now average 35,000 hours of a projected extended service life of 45,000 hours.

"The C-141 is 1960s equipment, based on a 1950s design, and while she's been a great airplane, the fleet is getting tired," said General Wax, noting that the C-141 is also not big enough to accommodate some of the more modern Army and Marine Corps equipment. The AMC fleet of 109 C-5s, meanwhile, has had to do double duty to take up much of the slack for the restricted C-141s. "The C-5 is also a great aircraft that can carry a lot of cargo a long way, but it's 1970s vintage and a bear to maneuver on the ground," said General Wax. "Our fleet is just getting old."

AMC Operations Tempo (C-5, C-141, KC-10, KC-135, CRAF)



"Nearly any military reponse is going to require mobility forces," says Brig. Gen. Charles Wax, AMC Tanker Airlift Control Center commander. The red line in the graph above shows the rising average of AMC missions per month.

Air Force officials continue to push for production of the new C-17 transport. To illustrate confidence in the controversial aircraft, AMC even pressed C-17s into their first contingency duty for Operation Vigilant Warrior. The Air Force is also complying with instructions from Congress to study possible alternatives to the C-17.

"I see our future as being a CONUS-based military force that can project quickly anywhere around the world, and that means we're going to need either the C-17 or something very close to the C-17," said General McPeak in remarks to defense reporters in Washington shortly before he retired October 25. "As long as we have the requirement to lift heavy Army forces around the world, we're going to need the C-17."

With AMC averaging 140 missions daily in forty countries, officials are equally concerned about the strain of that unusually high operations tempo on the airmen who operate and care for the machines. According to USAF statistics, the number of airmen deployed on TDY status service-wide has increased in the post–Cold War era, rising to 20,000 in October 1994, even as the force has shrunk. The trend has grown even more pronounced in the past year, said AMC officials.

The pace of operations has AMC straining to keep average TDY crew days below 130 annually, the command standard. In March, C-5 crews were averaging 120 days a year and C-130 crews 137 days. (Because so many C-141s were grounded, the average number of annual TDY days per crew member was well below the standard.) "In a nutshell, optempo is

USAF photo by 2d Lt. Laurel E. Scherer

A C-17 practices operations on a semiprepared airstrip during a training mission at Fort Irwin, Calif., above. The transport took part in the real thing in Vigilant Warrior, helping AMC perform 601 missions in the first month.

Photo by Paul Kennedy

The C-5 (here undergoing maintenance at Dover AFB, Del.) has done double duty for AMC, taking up the slack for the 1960s-vintage C-141. Despite the increased operations tempo, AMC says it can keep pace with demand.

a serious concern for both our equipment and our people, and we're spending a lot of time trying to manage it," said General Handy.

Two Weeks to Regroup

AMC officials have been taking steps to ease the strain. Gen. Ronald R. Fogleman, formerly AMC's commander and now USAF Chief of Staff, began Phoenix Pace a year and a half ago. Under this program, for two weeks each year AMC wings are essentially allowed to stand down, recall personnel from around the world, and regroup. It has become a major command priority.

"We promise all of the units on the front lines in Rwanda, Somalia, Haiti, and southwest Asia that they get to come home and rest for two weeks each year, which is not very long," General Wax said. "But that's all we can afford around here, and the feedback has been great."

The salutary effects of Phoenix Pace were obvious to commanders at the 436th AW, where aircrews and support units returned to base and stood down from deployments for two weeks last August. For some commanders, it was the first time in a year that they had seen their entire units in one place.

"It may sound simple, but Phoenix Pace could be the only time you can get a squadron photo with all your people or get more than a third of your aircrews to attend a squadron commander's call," said Colonel Kaufman.

During the two weeks, squadrons concentrate on completing critical training events, conducting scheduled maintenance, and holding safety seminars. Equally important is the ability to plan family outings and social functions with some certainty.

"What typically happens is our people may be out eating with friends and families on Wednesday night, and they make plans to go to a concert on Friday night or to the lake on Saturday," said Colonel Kaufman. "Then they get put on notification for a contingency instead, and it's really annoying. During Phoenix Pace, we try our best to accommodate leave and give people time to spend with their families."

Nature of the Job

Perhaps no units in all of AMC are more in need of a break than the mission support units that set up airport operations and oversee the loading and unloading of troops and cargo around the world. For the past year, for instance, these TALCEs have logged an average of 171 days on TDY.

"An awful lot of my people have been on extensive temporary duty this year, and that's just the nature of our business when there's so much going on in the world," said Lt. Col. Greg Sheridan, commander of the 436th TALCE in Haiti. "This is what we love to do—come in some place and work hard with foreign nationals to build something up from nothing—but the tempo of operations does get to the people after a while."

In order to organize and deploy these support units more efficiently, AMC is consolidating its seven TALCE command-and-control elements into two Air Mobility Operations Groups at McGuire AFB, N. J., and Travis AFB, Calif. TALCE command-and-control elements will also remain at Kadena AB, Japan, and Ramstein AB, Germany.

"We're consolidating the TALCEs and collocating them with each numbered air force because they're so critical to the success of every effort," said General Wax. "No matter where we go or what we load, we still need the guys who receive the cargo and get it to the user, which is why they're probably on TDY more than anyone else in the command."

Despite the obvious strains that an unbroken string of contingencies has placed on AMC, some senior Air Force leaders insist that they've managed to keep their personnel from becoming dangerously overworked.

"I know of no GI since Willie who didn't feel he was the only SOB in town who was doing any work," said General McPeak. "I kind of like an attitude that says, 'Boy, I'm pulling my share around here.' Frankly, that's precisely why people join the Air Force—because they want adventure and to work hard. Otherwise, they're in the wrong business."

As a sign that AMC is still capable of keeping pace with demand, General McPeak points to the rapid and relatively smooth deployment to southwest Asia despite the command's heavy engagement in Haiti. "So while there may be limits to how hard you can push people, in general if you want good performance, just ring our phone number," he said. "We can do just about anything." ■

James Kitfield is the defense correspondent for Government Executive *Magazine in Washington, D. C., and a regular contributor to* Air Force *Magazine. His most recent article, "The Medical Profession Meets Materiel Command" appeared in the December 1994 issue.*

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Breaking with a policy of forty years, German units now deploy regularly outside the NATO area.

The Luftwaffe Spreads Its Wings

By Maj. Brian Collins, USAF

Photo by Holger Jaruschek

German forces depend for airlift on the Transall C-160, the most visible sign of Luftwaffe activity overseas (above, a Transall in UN livery). The swingwing Tornado (opposite) equips six Luftwaffe fighter-bomber wings and—with upgrades—will be part of Germany's contribution to NATO reaction forces.

UNTIL German reunification, West Germans saw themselves as NATO's front line. They knew that if war broke out in Europe, it would be fought mainly in Germany. German armed forces did not even consider deploying air units or troops outside Germany.

The 1990 reunification threw the armed forces into a new strategic situation, however, with sizable consequences for the Luftwaffe. The breakthrough was Turkey's 1991 request for NATO assistance during Operation Desert Storm. For the first time, the Luftwaffe faced a requirement to send combat units to a NATO nation in response to a danger that did not threaten German territory. The Luftwaffe dispatched one squadron of Alpha Jet ground-attack aircraft and one battery of Roland Short-Range Air Defense missiles to Turkey, fulfilling Germany's commitment.

Since then, Germany has increasingly deployed troops outside the NATO treaty area. For example, German units took part in United Nations operations to aid the Kurds in Iraq in 1991. In 1992, German forces embarked on a medical mission to support UN forces in Cambodia. Since July 1992, the Luftwaffe has been taking part in the airlift into the city of Sarajevo, Bosnia-Hercegovina. German forces also joined in the March 1993 Bosnia aircrops.

German armed forces are being dispatched frequently to dangerous areas. The postwar German Army lost its first soldier in an out-of-area operation in Cambodia in 1993. Luftwaffe transports have been attacked as they have flown over the former Yugoslavia, and one aviator was

Photo by Air Portraits

wounded by the sporadic gunfire aimed at incoming aircraft.

In 1993, Bonn sent 1,700 ground troops to man a logistics base supporting UN operations in Somalia. Luftwaffe crew members flew aboard NATO's E-3 Airborne Warning and Control System aircraft providing surveillance and fighter control over the Balkans. Even the German Navy deployed ships to join the Western naval fleet sent to enforce the UN blockade of the Yugoslav coast.

Total Turnaround

These steps reflect nearly a complete break with the forty-year German claim that the nation's postwar Constitution placed an absolute ban on sending combat troops outside NATO Europe. In 1994, the German Supreme Court decided that the government could do so if forces were deployed as part of a collective security agreement.

The decision has begun to open up new prospects, but it also places new pressure on the German military forces, especially the Luftwaffe. The air arm is relatively small. Germany is a land power, and the Army traditionally has been the largest of the armed services in personnel (250,000 troops today), share of budget (approximately sixty percent of defense spending), and political influence in the Defense Ministry. The Luftwaffe, by contrast, has only about 80,000 personnel and about thirty percent of the German defense budget.

Today's Luftwaffe strength is about thirty percent below its Cold War peak. Its inventory of combat aircraft has been cut almost in half, to fewer than 500 of all types.

Unlike the US Air Force, the postwar Luftwaffe has never been configured for expeditionary operations. Officers acknowledge that the service's combat capabilities have been limited. Moreover, these capabilities always have been integrated into NATO air defenses, and therefore the Luftwaffe has never demonstrated the capability for independent action or for taking a major part in large-scale campaigns.

Sparked by increased activity abroad, the Luftwaffe recently placed all of its combat systems (aircraft and groundbased air defenses) and transport aircraft under a single command—the Luftwaffe's *Führungskommando* (Air Force Operations Command). This was done to streamline the Luftwaffe's ability to conduct out-of-area operations speedily.

Some officers maintain that this would enable it to compete better with the German Army for operational control over German forces on the increasingly important out-of-area missions. At present, the German armed forces have no joint operational staff in the mold of the US Joint Chiefs of Staff and the US unified command system.

Crisis Reaction Forces

The Luftwaffe reorganization reflects, in part, the German armed forces' development of its Crisis Reaction Forces (CRF), which together with the Main Defense Forces (MDF) will form the backbone of the future military force. Analysts assert that the CRF will get priority in people, equipment, training, and money, inasmuch as it will be Germany's independent rapid reaction force for use in support of the UN and other organizations, as well as Germany's contribution to NATO reaction forces. The MDF will be left to train conscripts with what equipment and money is left.

Photo by Nate Leong

Luftwaffe assets include Tornados in interdictor/strike, air defense, and electronic combat/reconnaissance versions. The aircraft above was photographed at Volk Field, Wis., on its way to a Red Flag exercise at Nellis AFB, Nev.

Luftwaffe officers are planning to use the CRF to their advantage in upcoming budget battles. They argue that few of their forces could be relegated to the MDF and that NATO requires airspace surveillance and air defense to be kept at high levels. The Luftwaffe's requirement for skilled pilots, surface-to-air missile (SAM) operators, and weapon controllers cannot be met by conscripts thrown into the breach during mobilization.

The Luftwaffe is now allocating a large percentage of its combat assets to the Alliance's crisis reaction pool *[see box]*. The service's plans call for four of the Luftwaffe's six Tornado fighter-bomber wings each to field one squadron of twelve aircraft for the reaction forces. The four Luftwaffe fighter wings primarily equipped with F-4F fighter aircraft will produce two crisis reaction squadrons of twelve fighters each. Germany is assigning relatively few of its older fighters to the crisis force because NATO has access to more modern fighters from other nations.

The Luftwaffe also owns all German strategic SAMs. Luftwaffe crews operating Patriot and Hawk SAM batteries are trained by the US Army. The Luftwaffe's SAM units also plan to be major players with the CRF, providing eleven squadrons drawn from the six SAM wings. Under current plans, a CRF Patriot squadron will consist of one fire-control unit with five to eight launchers, a Hawk squadron of two fire-control units and eight launchers, and a Roland squadron of two fire-control units and eight launchers.

The Luftwaffe's transport wings are, by virtue of their mission, a *de facto* part of the CRF. Each transport wing commander will retain a high degree of flexibility in meeting CRF needs because he will be able to fulfill a CRF mission by drawing from either of his two squadrons.

Serious Shortages

Even as the service prepares for more frequent operations, however, the Luftwaffe faces fairly serious equipment problems. The Patriot air defense batteries are perhaps the only major Luftwaffe systems not in need of replacement or major upgrades.

In airlift, the German forces depend on their fleet of Transall C-160 aircraft, but the Transalls' days are numbered. Projections show that replacements will become necessary by 2010. The French are taking the Germans at their word on increased integration of the European defense production system and are lobbying hard for the Germans to replace the Transall fleet with a "European"—that is, French—aircraft, rather than one produced in the United States. France's so-called Future Large Aircraft initiative is particularly important for Paris, given the economic stakes.

Because the Army was designed to fight only in Germany, the Luftwaffe has no strategic wide-body aircraft or tankers. The only short- to medium-term solution to this problem is to fill the gap with NATO—primarily US—support, as when Air Mobility Command ferried German Patriot batteries to Israel during the Persian Gulf War.

The fighter-bomber fleet of Tornados is looking primarily for new precision guided munitions and standoff weapons as well as new, improved avionics. As for air-to-air fighters, the single MiG-29 squadron is much sought after for air combat training, but the MiG-29 has major maintenance and logistics problems. The Luftwaffe will not buy any more and has enough problems meeting its standard operationally available squadron level of twelve.

The F-4F provides the bulk of the Luftwaffe's fighter-interceptor aircraft. The F-4Fs are estimated to last until 2005, after which they will be

Luftwaffe Crisis Reaction Forces

Four Tornado squadrons (each with twelve aircraft): One electronic combat/reconnaissance, one tactical reconnaissance/interdiction, two all-weather fighter-bombers

Two F-4F squadrons (each with twelve aircraft): All-weather fighters

Four Hawk squadrons (each with six launchers): All-weather surface-to-air missiles (SAMs)

Six Patriot squadrons (each with five to eight launchers): All-weather SAMs

One Roland squadron (each with eight launchers): All-weather Short-Range Air Defense

Three Transall wings (*de facto* Reaction Forces): Tactical airlifters

retired. The combat modernization program instituted in 1989 to put the Hughes APG-65 radar and Advanced Medium-Range Air-to-Air Missile on 110 Luftwaffe F-4Fs was just a stopgap measure until the Eurofighter 2000 was to be ready.

The Eurofighter 2000 highlights a difficult situation in which today's Luftwaffe finds itself. Conceived as a Cold War system, the Eurofighter was designed to be an extremely maneuverable interceptor, able to take off from and land on cratered runways or taxiways. It has a short range because plans called for it to operate mainly over German territory. No real thought was given to the very different requirements outside the NATO area of operations. In today's deployment scenarios, with their requirements for tanker support, longer range, and longer loiter

Photo by E. Moedersheim

The F-4 (above) accounts for most of the Luftwaffe's fighter-interceptors. Though older than the MiG-29 (below), the F-4 does not suffer from as many maintenance and logistics problems. The Luftwaffe will not buy more MiG-29s.

Photo by Holger Jaruschek

times, the Eurofighter does not measure up.

Germany's Minister of Defense, Volker Ruhe, attempted to stop the ongoing development program before completion of the first prototype, opting for development of a simpler and less costly version. This fighter (instantly labeled the *Jäger-Lite* or "Light Fighter") has not been successful.

The German aviation industry believes that the Defense Ministry is trying to distance itself from the Eurofighter 2000 and let the British aircraft industry take the lead, despite the fact that Deutsche Aerospace is responsible for Eurofighter development. Some German officials argue that an existing fighter with proven performance characteristics might be a better buy than the Eurofighter. Deutsche Aerospace and the German labor unions portray the issue as a clear choice between buying the Eurofighter and employing Germans in German factories or going with a foreign fighter and throwing thousands of Germans out of work. The political battle is intense.

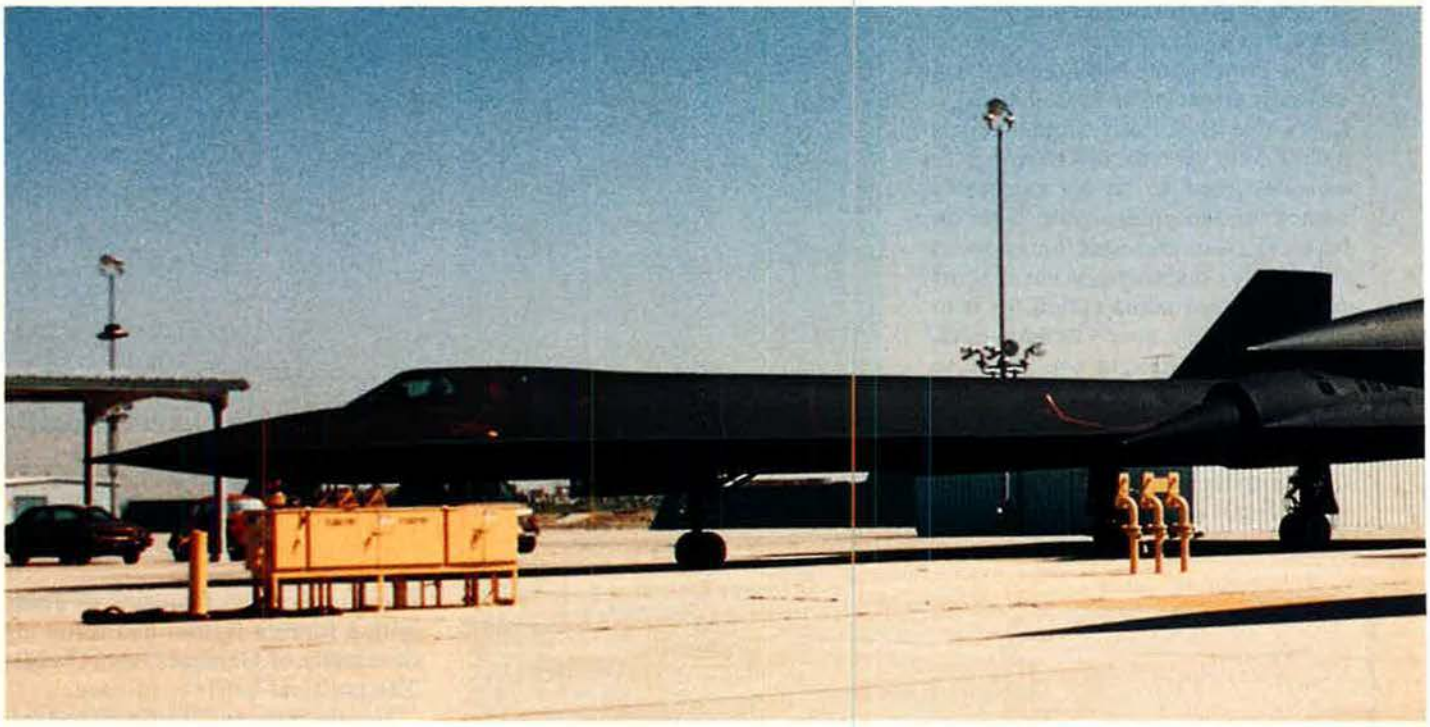
For the moment, the German Ministry of Defense has adopted an interim production estimate of 140 aircraft. The government will not make a firm decision on how many aircraft it wants until the price is officially set in early 1995. Estimates for the system price per aircraft range from $70 million to $100 million.

There appears to be a political consensus within Germany that the armed forces are moving in the right direction, despite the problems created by simultaneous pressures to cut the defense budget and pick up new commitments outside the NATO area.

Theoretically, the armed forces are deployable worldwide in support of various missions. The German forces will only act within a coalition, however, and the presence of German forces abroad still arouses suspicion in some quarters. For the short term, the Luftwaffe's Transall airlifters will likely continue to be the most visible sign of increased German activity overseas. ■

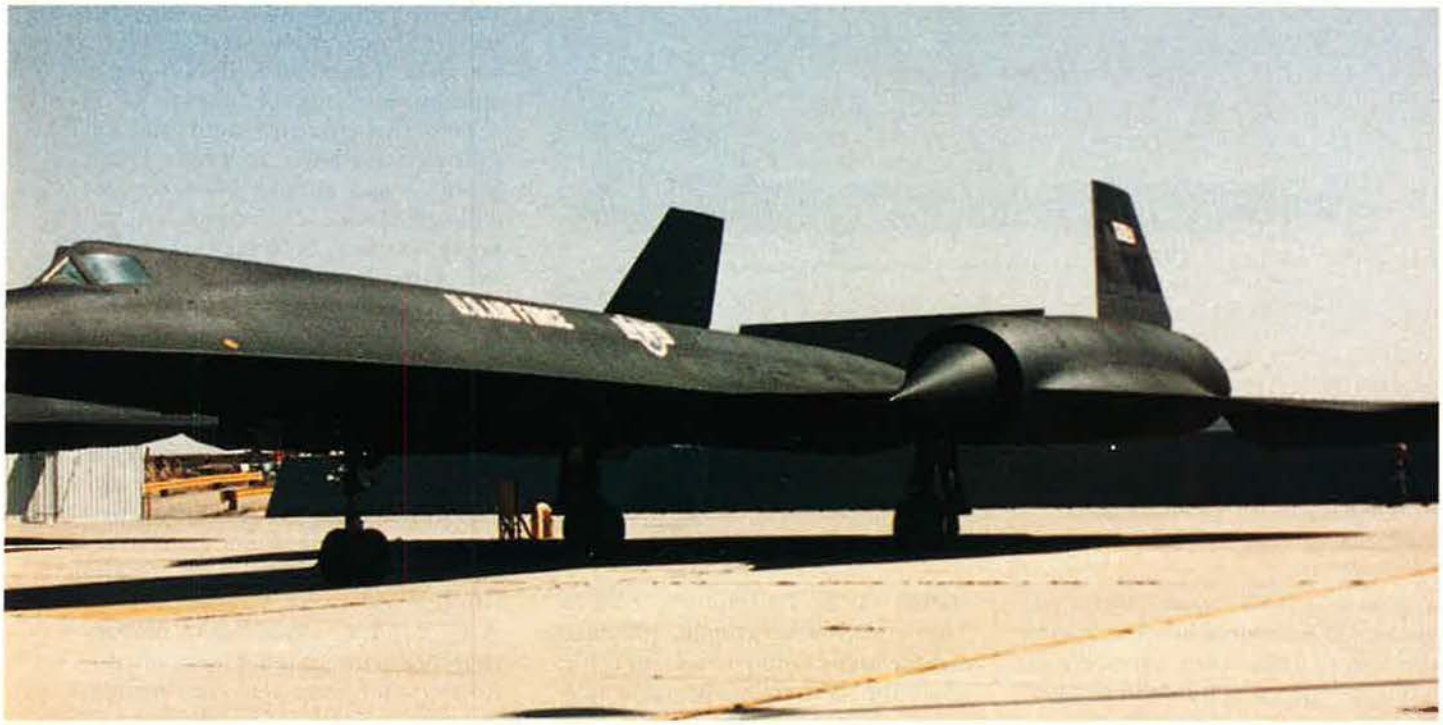
Maj. Brian Collins, USAF, recently graduated from the German Armed Forces General Staff Course in Hamburg. He was an aerospace analyst in the CIS Military Studies Group at Supreme Headquarters Allied Powers Europe in Belgium and is now assigned to the NATO Airborne Early Warning unit at Geilenkirchen, Germany. His most recent article for Air Force *Magazine, "Russia Fragments Its Airpower," appeared in the February 1994 issue.*

With its unprecedented speed and capabilities, the A-12 proved an invaluable reconnaissance tool during the Vietnam War.



BLACK SHIELD

Air Force procurement of the two-seat SR-71 (top, left) eased the CIA's acquisition of the one-seat A-12 (right). Because it carried only a pilot, the A-12 had room for a bigger and better camera and other collection devices.



Lockheed photo via Jay Miller

On May 31, 1967, a long, thin, highly classified American aircraft taxied to the runway at Kadena AB, Okinawa, south of the Japanese main islands. Despite heavy rain, the pilot was cleared to take off, and the aircraft roared into the sky. A few hours later and some 1,500 miles away, this unusual craft made two swift slashes through the airspace of North Vietnam, turned, and dashed toward home.

The aircraft, developed by Lockheed's Skunk Works for the Central Intelligence Agency, had opened a new era in operational airpower. The first mission of the A-12 reconnaissance aircraft had been flown at more than three times the speed of sound.

Earlier in the spring of 1967, a good deal of apprehension was evident in Washington about the possibility that the North Vietnamese Communist regime might deploy deadly surface-to-surface missiles on its territory and attack American military bases in South Vietnam. This concern was aggravated by doubts that the US would be able to detect the move if it occurred. President Lyndon B. Johnson asked for a proposal on the matter.

The CIA suggested using its latest classified A-12 reconnaissance aircraft, code named "Oxcart." The Oxcart was notable for its extremely long, slim shape, enormous jet engines, and sharp, projecting nose. It was a revolutionary airplane, able to fly at Mach 3 for more than 3,000 miles without refueling. After it had burned off much of its fuel, it could cruise above 90,000 feet. The CIA pointed out that the A-12's camera was far superior to those on its drones or on its U-2 spy plane, and its vulnerability was far less.

After the end of U-2 flights over the Soviet Union in 1960, when Francis Gary Powers was shot down, US authorities were understandably cautious about committing to further manned reconnaissance over unfriendly territory. Even so, officials from the State Department and Defense Department, who earlier that year had opposed such a deployment, decided to reexamine the risks.

The first interest was in using the A-12 over Cuba. In early 1964, CIA project headquarters began planning for the contingency of flights over that island under a program designated Skylark. An accident held up this program for a time, but in August, the CIA directed that Skylark achieve emergency operational readiness by November 5. This involved preparing a small detachment that would be able to do the job over Cuba, though at less than the full design capability of the Oxcart. The goal was to operate at Mach 2.8 and 80,000 feet.

After considerable aircraft modifications, the detachment simulated Cuba missions on training flights. A limited emergency Skylark capability was announced. With two weeks' notice, the detachment would overfly Cuba, though with fewer ready aircraft and pilots than had been planned.

Despite all this preparation, U-2s proved adequate for the mission, and the A-12 was reserved for more critical situations.

Project Black Shield

Detailed planning for an Asian deployment had been going on since 1965, when the United States had considered using the Oxcart to spy on Chinese military activities. The project, code named "Black Shield," called for the Oxcart to operate out of Kadena. In the first phase, three aircraft would stage to Okinawa for

Lockheed photo via Jay Miller

The ultrasecret A-12 often wore Air Force livery in an effort to mask its true mission, which in 1967 was to fly over North Vietnam at Mach 3.1 to determine whether the North Vietnamese had deployed surface-to-surface missiles.

sixty-day periods, twice a year, with about 225 personnel involved. After this was in good order, Black Shield would advance to maintaining a permanent detachment at Kadena.

In May 1967, as State and Defense engaged in deliberations, the Director of Central Intelligence, Richard Helms, submitted another formal proposal to deploy the Oxcart. He also raised the matter at President Johnson's "Tuesday lunch" with top security advisors on May 16 and received the President's approval to go ahead with the plan. Later that day, presidential advisor Walt Rostow formally conveyed Johnson's decision, and the Black Shield deployment plan was put into effect.

The next day, the airlift to Kadena began. On May 22, the first A-12 (serial number 131) flew nonstop from the continental US to Kadena in six hours and six minutes. Aircraft No. 127 departed on May 24 and arrived five hours and fifty-five minutes later. The third, No. 129, left according to plan on May 26 and proceeded normally until, in the vicinity of Wake Island, the pilot experienced difficulties with the inertial navigation and communication systems. He made a precautionary landing at Wake, where a prepositioned emergency recovery team secured the aircraft without incident. The flight to Kadena resumed the next day.

Arrangements were made to brief the ambassadors and CIA chiefs of station in the Philippines, Taiwan, Thailand, South Vietnam, and Japan and the high commissioner and chief of station, Okinawa. The prime ministers of Japan and Thailand were advised, as were the president and defense minister of Taiwan. The chiefs of the air forces of Thailand and Taiwan were also briefed. They reacted favorably.

Ready to Go

On May 29, 1967, the unit at Kadena was ready to fly an operational mission. Under the command of Air Force Col. Hugh C. Slater, 260 personnel had deployed to the Black Shield facility. Except for hangars, which were a month short of completion, everything was in shape for sustained operations. The next day, the detachment was alerted for a mission to take place on May 31.

This first Black Shield mission followed one flight line over North Vietnam and another over the demilitarized zone separating North and South Vietnam. It lasted three hours and thirty-nine minutes, and the cruise legs were flown at Mach 3.1 and 80,000 feet.

Results were satisfactory. Seventy of the 190 known surface-to-air missile (SAM) sites in North Vietnam were photographed, as were nine other priority targets. No radar signals were detected, indicating that the first mission had gone completely unnoticed by both the Chinese and North Vietnamese. By mid-July the A-12 reconnaissance flights had determined with a high degree of confidence that there were no surface-to-surface missiles in North Vietnam.

Fifteen Black Shield missions were alerted between May 31 and August 15, 1967. Seven of the fifteen were actually flown. Of these, four detected radar tracking signals, but no hostile action was taken against any of them.

CIA project headquarters in Washington planned, directed, and con-

Lockheed photo via Jay Miller

The A-12 reached its top cruising height above 90,000 feet in a hurry with its Mach 3–plus speed. Once there, it had a range of more than 3,000 nautical miles. At that altitude and speed, it was safe from most threats.

trolled all operational missions. Weather in the target areas was constantly watched. Each day at 4:00 p.m. Washington time, a mission alert briefing was held. If the forecast appeared favorable, Kadena was alerted and provided a flight route.

The alert preceded the actual takeoff by twenty-eight to thirty hours. Twelve hours before takeoff, target weather was reviewed for a second time. If it remained favorable, the mission generation sequence continued. Two hours before takeoff, a go/no go decision was made and communicated to the field. The final decision depended not solely on weather over the target area but also on weather in the refueling areas and at the launch and recovery base.

The A-12's operations and maintenance at Kadena began with the alert notification. A primary aircraft and pilot and a backup aircraft and pilot were selected. The aircraft were thoroughly inspected and serviced, all systems checked, and the cameras loaded into the aircraft.

Pilots received a detailed route briefing in the early evening before the day of flight. On the morning of the flight, a final briefing was held, including information on the condition of the aircraft and its systems, last-minute weather forecasts, relevant intelligence, and changes in the flight plan.

Two hours before takeoff, the primary pilot had a medical examination, got into his suit, and was taken to the aircraft. If any malfunctions developed on the primary aircraft, the backup could execute the mission one hour later.

Lockheed photo via Jay Miller

The large "Q-bays" that held cameras and sensors are visible here both fore and aft of the cockpit. The A-12's designer, Clarence "Kelly" Johnson, earned the Presidential Medal of Freedom for his work on the A-12.

A typical route profile for a Black Shield mission over North Vietnam included a refueling shortly after takeoff south of Okinawa, the planned photographic pass or passes, withdrawal to a second aerial refueling in the Thailand area, and return to Kadena. So great was the Oxcart's speed that it spent only twelve and a half minutes on two passes. Because of the A-12's turning radius of eighty-six miles, however, officials knew that on some mission profiles it might be forced to intrude into Chinese airspace during its turn.

Once the Oxcart had landed back at Kadena, the camera film was removed from the aircraft, boxed, and sent by special plane to the processing facilities. Film from earlier missions was developed at the Eastman Kodak plant in Rochester, N. Y. By late summer 1967, an Air Force center in Japan was processing the film in order to place the photointelligence in the hands of American commanders in Vietnam within twenty-four hours of completion of a Black Shield mission.

Missiles Are Fired

Between August 16 and December 31, 1967, twenty-six A-12 missions were alerted. Fifteen were flown. On September 17, one SAM site tracked the vehicle with its acquisition radar but was unsuccessful with its Fan Song guidance radar. During an A-12 flight in October, a North Vietnamese SAM site launched a single, unsuccessful missile—the first time a missile had been fired at the Oxcart. Mission photography documented missile smoke above the SAM firing site, the missile itself, and its contrail. The A-12's electronic countermeasures equipment appeared to perform well against the missile firing.

On another October flight, pilot Dennis Sullivan detected radar tracking on his first pass over North Vietnam. Two sites prepared to launch missiles, but neither did. During the second pass, however, at least six missiles were fired at Sullivan's aircraft, each confirmed on mission photos by missile vapor trails. Sullivan saw these vapor trails and wit-

Across the US at 1,700 mph

An impressive demonstration of the Oxcart's capability occurred on December 21, 1966, when Lockheed test pilot Bill Parks flew 10,198 statute miles in six hours.

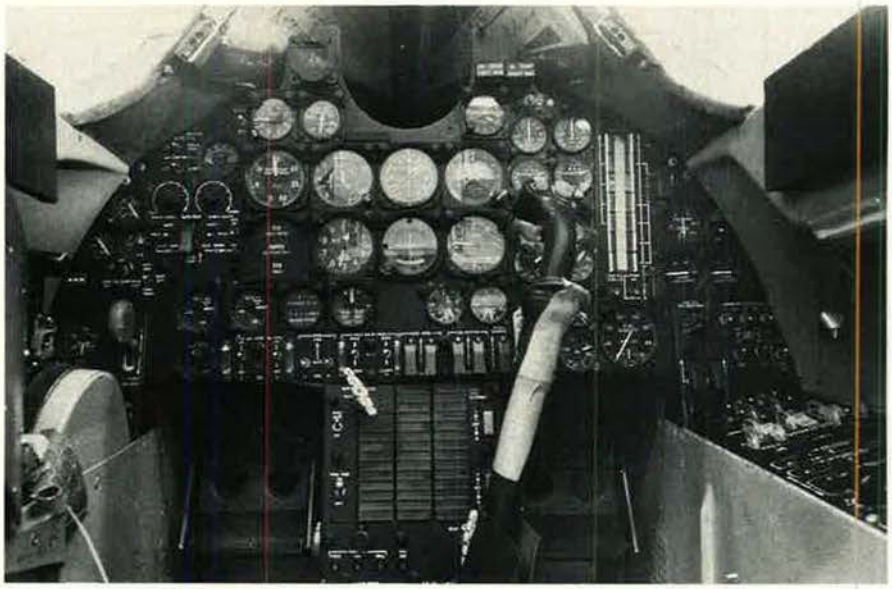
The A-12 left the test area in Nevada and flew north over Yellowstone National Park, then east to Bismarck, N. D., and on to Duluth, Minn. It then turned south and passed Atlanta, Ga., en route to Tampa, Fla., then northwest to Portland, Ore., and south to Nevada. The flight turned east, passing Denver, Colo., and Saint Louis, Mo. Turning around at Knoxville, Tenn., it passed Memphis in the homestretch back to Nevada.

This six-hour flight established a record unapproachable by any other aircraft.

Sonic booms caused little trouble on this or other flights. Although the inhabitants of a small village some thirty miles from the Nevada site were bothered as the aircraft broke through the sound barrier while gaining altitude, a change of course remedied this.

At altitude, the Oxcart produced no more than an ominous rumble on the ground. Because the plane was invisible to the naked eye, no one associated this sound with its source.

Lockheed photo via Jay Miller



What's state of the art today can look antediluvian tomorrow. The plethora of dials and gauges in the A-12 cockpit would be as out of place as a Gosport communications system in the cockpits of the 1990s.

nessed three missile detonations. Postflight inspection of the aircraft revealed that a piece of metal had penetrated the lower right wing fillet area and lodged against the support structure of the wing tank. The fragment was not a warhead pellet but may have been a part of the debris from one of the missile detonations observed by the pilot.

In the first three months of 1968, the Oxcart operation was alerted fifteen times and flew six missions. Four of these were over North Vietnam and two over North Korea. The first mission over North Korea on January 26, 1968, occurred during a tense period, only three days after the Communist seizure of the US Navy ship *Pueblo*. Black Shield aimed to discover whether the North Koreans were preparing any large-scale hostile move on the heels of this incident. Chinese tracking of the flight was apparent, but no missiles were fired at the plane.

The State Department was reluctant to endorse another mission over North Korea for fear of diplomatic repercussions if the aircraft came down in hostile territory. Brig. Gen. Paul Bacalis then briefed Secretary of State Dean Rusk on the details of the mission and assured him that the aircraft would pass over North Korea in no more than seven minutes. General Bacalis explained that even if some failure occurred during flight, the aircraft would be highly unlikely to land either in North Korea or in China. Secretary Rusk made some suggestions to alter the flight plan, thus becoming the project's highest-ranking flight planner.

Between April 1 and June 9, 1968, two missions were alerted for overflights of North Korea. The only mission that actually gained approval was flown on May 8. As it turned out, that flight was also the Oxcart's last. The problem was expense.

Beginning of the End

For years, the Bureau of the Budget had voiced concern at the past and projected costs of the A-12 and its two-seat Air Force version, the SR-71. It questioned the requirement for the total number of aircraft represented in the combined fleets and doubted the necessity for a separate CIA A-12 fleet. Several alternatives were proposed to achieve a substantial reduction in the forecasted spending, but the recommended course was to phase out the A-12 program.

Throughout the Oxcart program, USAF had been exceedingly helpful. It gave financial support, conducted refueling, provided operational facilities at Kadena, and airlifted Oxcart personnel and supplies to Okinawa for operations over Vietnam and North Korea. It also ordered from Lockheed a small fleet of A-11s, which on being finished as two-seat reconnaissance aircraft would be named SR-71. These would become operational about 1967.

The stated mission of the SR-71 was to conduct "poststrike reconnaissance," that is, to look the enemy situation over after a nuclear exchange. The likelihood of using them in that capacity appeared small, but the Air Force's SR-71s were of course also capable of ordinary reconnaissance missions.

Even for these purposes, however,

The Oxcart Eleven

Pilots for the A-12 obviously had to be extraordinarily competent, not only because of the unprecedented performance of the aircraft itself but also because they were to fly intelligence missions. Air Force Brig. Gen. Don Flickinger drew up the criteria for selection, with advice from Lockheed's main designer, "Kelly" Johnson, and from CIA headquarters.

Pilots had to be qualified in the latest high-performance fighters, emotionally stable, and well-motivated. They were to be between twenty-five and forty years old. The size of the A-12 cockpit made it necessary that they be under six feet tall and weigh under 175 pounds.

Air Force files were screened for candidates. Psychological assessments, physical examinations, and refinement of criteria eliminated many. Preevaluation processing resulted in sixteen potential nominees. This group underwent further intensive security checks and medical scrutiny by the Agency.

The CIA approached those who remained and offered employment on a highly classified project involving a very advanced aircraft. In November 1961, commitments were obtained from five of the group. The small size of the group recruited at this stage required that a second search be undertaken.

When the final screening was complete, eleven pilots were selected: William L. Skliar, Kenneth S. Collins, Walter Ray, Lon Walter, Mele Vojvodich, Jr., Jack W. Weeks, Ronald L. Layton, Dennis B. Sullivan, David P. Young, Francis J. Murray, and Russell Scott.

After the selection, the Air Force and CIA arranged transfers and assignments to cover the pilots' training and to lay the basis for their transition from military to civilian status. Their compensation and insurance arrangements were similar to those for U-2 pilots.

the A-12 possessed certain clear advantages over the SR-71. It carried only one man and thus had room for a much bigger and better camera as well as for various other collection devices that at the time could not be carried by the SR-71. It was certainly the most effective reconnaissance aircraft in existence or likely to be in existence for years to come. In addition, it was operated by civilians and could be employed covertly or at least without the number of personnel and amount of fanfare normally attending an Air Force operation.

The Air Force's procurement of SR-71s eased the path of Oxcart development because it meant that the financial burden was shared with the Air Force, and the cost per aircraft was reduced by producing greater numbers. In the long run, however, the existence of the SR-71 spelled Oxcart's doom, for reasons that appear to have been chiefly financial.

In the months after it first performed its appointed role over North Vietnam on the last day of May 1967, the Oxcart demonstrated both its exceptional technical capabilities and the competence with which its operations were managed. As word began to get around that Oxcart was to be phased out, high-level officials began to feel uneasy.

Concern was expressed by Rostow, key congressional figures, members of the President's Foreign Intelligence Advisory Board, and members of the President's Scientific Advisory Committee. The phaseout lagged. A new study of the feasibility and cost of continuing the Oxcart program was completed in the spring of 1968, and four new alternatives for keeping it operational were proposed.

In spite of these belated efforts, in May 1968 Secretary of Defense Clark Clifford reaffirmed the decision to terminate the Oxcart program and store the aircraft. The President confirmed the Secretary's decision.

Early in March 1968, USAF SR-71 aircraft began to arrive at Kadena to take over the Black Shield commitment, and by gradual stages the A-12 was placed on standby to back up the SR-71. After Oxcart's last operational mission, the Kadena detachment was advised to prepare to go home.

The remarkable history of the Oxcart project and the Black Shield missions is now coming to light, well after its retirement and four years after its successor, the SR-71, was withdrawn from Strategic Air Command service.

Project headquarters selected June 8, 1968, for redeployment. In the meantime, A-12 flights were to be limited to those essential for maintaining flying safety and pilot proficiency. After Black Shield aircraft arrived in the US, they would proceed to storage. Those already at base were to be stored by June 7.

In its final days overseas, the Oxcart program suffered yet another blow, as inexplicable as it was tragic. On June 4, Aircraft No. 129, piloted by Jack Weeks, set out from Kadena on a check flight necessitated by a change of engine. Weeks was heard from when he was 520 miles east of Manila. Then he disappeared.

Search-and-rescue operations discovered nothing. No cause for the accident was ever ascertained, and it remains a mystery to this day. The official news release identified the lost aircraft as an SR-71, and security was maintained. A few days afterward, the two remaining planes on Okinawa returned to the US and were placed in storage with the remainder of the Oxcart family.

In a ceremony at the project's secret Nevada base on June 26, 1968, Lockheed A-12 designer Clarence "Kelly" Johnson lamented the end of an enterprise that had inspired his most outstanding aircraft design. The Oxcart design had won him the Presidential Medal of Freedom in 1964 and the National Medal of Science in 1966 for his contributions to aerospace science and national security.

At the same ceremony, Vice Adm. Rufus L. Taylor, deputy Director of Central Intelligence, presented the CIA Intelligence Star for valor to pilots Kenneth S. Collins, Ronald L. Layton, Francis J. Murray, Dennis B. Sullivan, and Mele Vojvodich, Jr., for participation in Black Shield. The posthumous award to pilot Jack W. Weeks was accepted by his widow.

Colonel Slater and his deputy, Col. Maynard N. Amundson, received the USAF Legion of Merit. The Air Force Outstanding Unit Award went to the members of the Oxcart Detachment (1129th Special Activities Squadron, Detachment 1) and the USAF supporting units.

The wives of these pilots were at the ceremony, where they—and their husbands' commanding officers—learned for the first time of the activities in which these men had been involved for nearly a decade. ■

This article is condensed from a secret study of the A-12 program that was first published in the Winter 1970–71 issue of Studies in Intelligence, *a classified internal publication of the Central Intelligence Agency. It was written by CIA analysts under the collective pseudonym "Thomas P. McIninch." The document was recently declassified. "The Oxcart Story" in our November 1994 issue, also taken from the CIA document, told of the origins and development of the A-12.*

Air Force Association - Working for its National Membership. January 1995

National Report

Reaching Out to the New Congress

With new members arriving to take their seats in the 104th Congress, there is a great opportunity for AFA national, state, and chapter organizations to reach out to their representatives and senators.

As the military experience of members of Congress continues to decline, contact with veterans groups, like AFA, is more important than ever. Only 210 out of 535 congressmen, or 39 percent of the 104th Congress, have had any military experience, compared with 44 percent of the 103rd Congress.

Take the opportunity to congratulate new members and renew ties to incumbents who were reelected. It is also a good time to contact all district offices of members of the 104th Congress — new and returning — to acquaint the staff with AFA's programs and activities and to offer (or renew) complimentary AFA congressional memberships. These memberships can be extended after you receive permission from your representative or senator. Provide local addresses to AFA's membership department and indicate that it is a congressional membership.

Your elected AFA leaders will be visiting the Washington offices of new members of Congress, and AFA's national staff will be providing materials to every member's office.

Remember: AFA's strength comes from its members — at the grass roots!

AFA Policy Papers Will Greet New Members of Congress

As the 104th Congress convenes this month, new members will be provided with AFA's 1995 Statement of Policy and issue papers on Manpower & Personnel and Readiness & Force Modernization. These documents outline the issues and concerns of importance to the Association and its members. They also provide direction to AFA leaders nationwide and the staff in working key policy issues during the year.

The development of these papers reflects the true grass roots nature of the Air Force Association. Input comes from multiple sources, including AFA's Junior Officer Advisory, Enlisted, Civilian Personnel, Reserve, Air National Guard, and Veterans/Retiree councils. AFA also receives input from the Air Force, from AFA advisory groups, like AFA's Science and Technology Committee and Advisory Group on Military Roles and Missions, and from individual members.

Based on this input, AFA's staff develops draft policy papers, which are then reviewed by AFA's elected leaders, Board of Directors, and, ultimately, the delegates to AFA's National Convention, which is AFA's principal policy-making body.

In the end, AFA policy positions reflect concerns across the broad spectrum of its membership, and the extensive grass roots participation in policy formulation adds weight to AFA positions as they are communicated to members of Congress.

Television Update

AFA's Aerospace Education Foundation is in the process of seeking underwriting for a weekly 30-minute television newsmagazine called "Air/Space Report." As previously reported on this page, AEF funded the pilot for the program.

"Air/Space Report" will be hosted by Emmy-award-winning broadcast journalist Tim White and produced by a team of veteran broadcast journalists. It will tackle air and space issues ranging from the technology, policy, and industry to the people who actually get the job done. Anyone concerned with aviation, aerospace, the economy, and national security will want to watch "Air/Space Report."

To date, PBS and The Military Channel have expressed interest in airing the program. The underwriting goal for the first year is $2.5 million.

AFA/AEF Report

By Daniel M. Sheehan, Assistant Managing Editor

Unflagging Florida

Home to more than 13,000 AFA members, Florida is surpassed only by Texas and California in total AFA membership. Representatives of the state's twenty-seven chapters gathered in Port Charlotte for the annual fall meeting, benefiting from a strong program of featured speakers.

The program had an international flavor with RAF Wing Cmdr. Alan R. C. Winkles addressing the luncheon meeting. Wing Commander Winkles, a veteran of Operation Desert Storm, serves as an exchange officer at US Central Command headquarters at MacDill AFB, Fla. He discussed the structure of the RAF and its possible role in future conflicts. He also related details of the RAF's participation in Desert Storm, emphasizing the strong contribution of the British Tornado aircraft to the ground-attack mission.

The day-long meeting was capped by an informative address by Maj. Gen. Lloyd W. Newton, US Special Operations Command's director of Operations. General Newton, a veteran of more than 250 F-4 missions in Vietnam, gave an insider's view of the workings of his command, which has had a busy time of it from Somalia to Haiti in the past twelve months.

Air Force Secretary Sheila E. Widnall took time during the AFA National Convention and Aerospace Technology Exhibition to meet with Cheryl Higer, vice commander of Region K of the Silver Wings, and cadet Randall Haskin, director of Operations for the Arnold Air Society. The AAS and the Silver Wings/Angel Flight held their executive board meeting in conjunction with the Convention.

USAF photo by Sherry Medders

National President R. E. Smith (right) and Golden Triangle (Miss.) Chapter President Marc McBride (left) congratulated AFROTC cadet Ken McDonald and Angel Flight cadet Kym Collins on their winning $500 and $1,000 scholarships, respectively. Both attend Mississippi State University.

Former National Vice President (Southeast Region) and Florida President Roy Whitton presented General Newton and Wing Commander Winkles with framed lithographs of *Pudgy V* (the P-38 fighter of Medal of Honor recipient and USAAF's second-leading ace Maj. Thomas B. McGuire, Jr.—a local hero raised in Sebring, Fla.). He was joined in the presentations by current Florida President Bill Sparks.

Mr. Sparks praised those in attendance for their part in Florida's being named Outstanding State Organization at AFA's National Convention. He singled out Carol L. Denicole, this year's Christa McAuliffe Memorial Award winner, and two other national award winners, the **Central Florida Chapter,** which was named Outstanding Chapter (more than 900 members), and the **On Wings of Eagles**

AFA's Eleventh Annual

AIR WARFARE SYMPOSIUM

Airpower—Meeting the Challenges of the 21st Century

February 23–24, 1995 • The Buena Vista Palace Hotel • Orlando, Florida • 800/327-2990

Invited Speakers

Hon. Sheila E. Widnall
Secretary of the Air Force

Gen. Ronald R. Fogleman
Chief of Staff, USAF

Gen. Ronald W. Yates
Commander, AFMC

Gen. John M. Loh
Commander, ACC

Gen. Henry Viccellio, Jr.
Commander, AETC

Gen. Robert L. Rutherford
CINC, USTRANSCOM
Commander, AMC

Gen. James L. Jamerson
CINC, USAFE

Gen. Joseph W. Ashy
CINC, USSPACECOM & NORAD
Commander, AFSPC

This symposium will provide an in-depth exploration of air warfare requirements in the context of changing security strategy and severe budget pressures. For more information, contact Jim McDonnell **703/247-5810** or Elizabeth Smith **703/247-5838,** or call **800/727-3337,** ext. **2030,** for updated recorded information.

Golf Tournament

AFA's Central Florida Chapter will sponsor a golf tournament on Walt Disney World's Magnolia and Palm Courses on Wednesday, February 22. Contact Bob Ceruti **407/365-1519.**

Gala

The chapter will sponsor its eleventh annual black-tie Gala on Friday, February 24. Proceeds will benefit AFA's Aerospace Education Foundation and the Air Force Memorial Foundation as well as AFROTC scholarships and other aerospace education activities. Contact Marty Harris **407/356-4810.**

Exhibits and Displays

For each Gala table purchased, companies will be allowed 100 square feet of exhibit space. Exhibits will be on display during the two-day Symposium and Gala. Contact Pat Teevan **703/247-5836.**

Airline and Hotel Information

AFA has obtained preferential airfares on several airlines. Before making reservations elsewhere, we suggest you dial toll free: **800/562-6664** Monday–Friday, 9:00 am–5:30 pm EST. Ask for Cindy or Sandy, and identify yourself as an attendee of the AFA Symposium at the Buena Vista Palace Hotel.

For hotel reservations, call Buena Vista Palace Hotel **800/327-2990** or nearby Grosvenor **800/624-4109.** Mention the AFA Symposium.

Registration Form

1995 Air Force Association National Symposium

Advance registration closes Friday, **February 17, 1995.** No refunds can be made for cancellations after this date.

Mail this form to:

Air Force Association
Attn.: Elizabeth Smith
1501 Lee Highway
Arlington VA 22209-1198

Phone: 703/247-5838
Fax: 703/247-5853

_____
name (print) title affiliation

_____
address

_____
city state zip telephone (with area code)

Symposium fee for AFA Individual or Industrial Associate member is **$425.** Fee for nonmember is **$450.** Fee includes sandwich lunch, reception/buffet (includes two drink vouchers), and continental breakfast.

__ Mark here to request an extra reception/buffet ticket and/or lunch ticket. Enclose **$95** for the additional reception/buffet ticket, **$18** for the extra lunch ticket.

Name of guest: _____

__ Check or money order (made out to Air Force Association) enclosed. **Total:** _____

Charge to: __VISA __ M/C ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ Expires: ____

Signature _____

Chapter, which got the nod as Outstanding Chapter (151–400 members).

Riverside Chapter Renamed

Though it built an enviable record of support for the Air Force and aerospace education under its former name, the Riverside County (Calif.) Chapter decided to change it to honor one of its bulwarks of support. For twenty-five years, the chapter has received the imprimatur of Bob Hope to host an annual golf tournament named for him. That event has raised a total of more than $265,000 over the years, which has funded scholarships, supported hospitals, and paid for morale, welfare, and recreation programs at March AFB, Calif., where the entertainer gave his first military camp show more than half a century ago.

Chapter President Paul Bell presented Mr. Hope with the charter officially naming the new **Bob Hope Chapter,** and 452d Air Mobility Wing Commander Brig. Gen. Michael J. Peters and 722d Air Refueling Wing Commander Col. Stephen R. Lorenz joined Mr. Bell in giving the comedian a leather-bound copy of the seventy-five-year history of March AFB. The presentations took place at a chapter-sponsored dinner.

Also at the dinner, chapter member Larry Noggle received an Ira C. Eaker Fellowship, which represents a $1,000 contribution in his name to AEF, and Rockwell International's Hal Massey received an AFA Award.

Chapter News

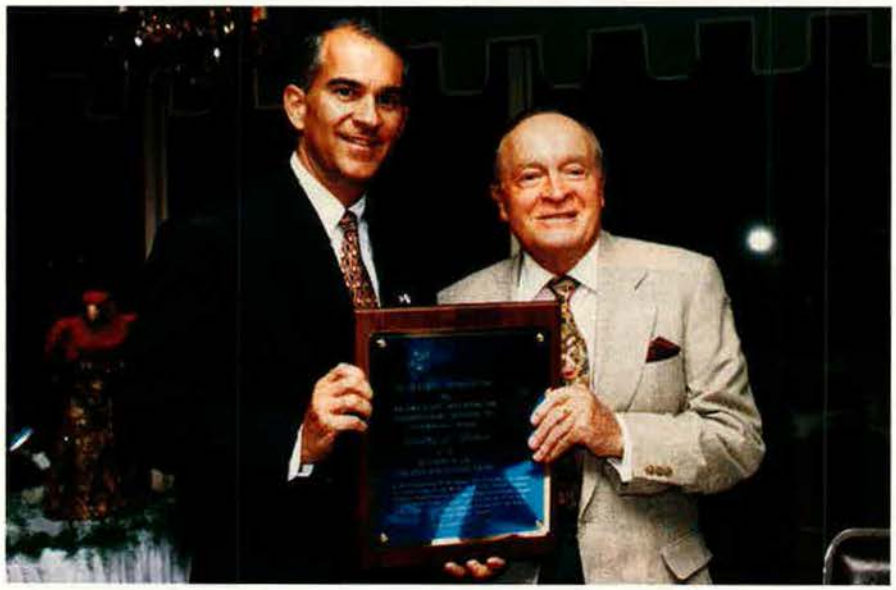
The **Langley (Va.) Chapter** has taken the lead in getting the word out to its members about the revamped unified command, US Atlantic Command (USACOM). The Norfolk-based command, which received its new mission October 1, 1993, is sure to have a profound impact on the nearby Langley AFB community, which is headquarters to the command's air component, Air Combat Command.

Reasoning that the best man to inform its members of the command's new mission, structure, and abilities would be its commander in chief, the chapter, joined by the Virginia Peninsula Chapter of the Association of the US Army and the Hampton Roads Council Navy League, sponsored a Joint Professional Luncheon with Adm. Paul David Miller as the featured speaker.

Admiral Miller, who has since retired, delivered his talk, "USACOM and the Future of Joint Operations," to an audience of 300, including officers from all services and civic and business leaders. Among those attending were Rep. Herb Bateman (R-Va.), ACC Vice Commander Lt. Gen. Thad A. Wolfe, Joint Warfighting Center Commander Maj. Gen. Joseph Redden, 1st Fighter Wing Commander Brig. Gen. Gregory S. Martin, Army Maj. Gen. Larry Lehowicz, and Marine Corps Brig. Gen. Bruce Byrum. Chapter President Bob Balch introduced Admiral Miller, whose remarks were deemed "very interesting and appropriate" by Chapter Vice President (External Communications) William P. Fedor.

Thanks to a close working relationship with the Warner Robins Air Logistics Center, the **Carl Vinson Memorial (Ga.) Chapter** has been second to none in its support for aerospace education, AFJROTC, and AFROTC programs. Robins AFB, Ga., and its Museum of Aviation have been the site of Young Astronauts Day, the

Photo by Sid Bilms



National Air Force Salute Foundation Chairman Thomas J. McKee accepts the Bob Hope Humanitarian Award on behalf of the late Dorothy Welker from the entertainer himself. Ms. Welker, the longtime secretary of the foundation, was an avid supporter of the Air Force Enlisted Men's Widows and Dependents Home.

Educational Outreach program, and the Georgia Youth Science and Technology Center. This support would not have been possible without the cooperation of the ALC's commander, Maj. Gen. William P. Hallin. In recognition of General Hallin's support, the chapter recently sponsored an Ira C. Eaker Fellowship in his name. Chapter President Chet Lowe, accompanied by Georgia President Jack Steed and board member Homer Childs, presented General Hallin with his fellowship during ceremonies at Robins AFB.

The **Richard D. Kisling (Iowa) Chapter** has been aggressively seeking Community Partners—with a great deal of success. It recently added seven to its rolls, increasing its total to twenty-seven new Community Partners in one twelve-month period. Former Chapter President Don Persinger handed out the plaques to seven representatives of Sioux City, Iowa, area businesses

Members of the **Fort Wayne (Ind.) Chapter** got a firsthand report on conditions in Sweden and the Swedish military from AFJROTC cadet Lt. Col. Kathy Hoverman upon her return from Scandinavia. Chapter President Ted Huff and Chapter Vice President (Communications) Gene Royer took the lead in thanking Cadet Hoverman for her report.

Also in Indiana, the **P-47 Memorial Chapter** has been busy promoting AEF's "Visions of Exploration" program. The chapter entered a float in the Evansville, Ind., Freedom Festival parade, attended by more than 100,000 people this year. The float honored the participants in the forty area classes served by the "Visions" program. The chapter has boosted that number to forty-seven during this school year, giving more students a chance to become better informed about science, technology, and geography under the auspices of this program.

Westchester Falcon (N. Y.) Chapter President Herbert Leopold was one of many AFA members outraged by the Smithsonian Institution's proposed exhibition of the *Enola Gay* and the last days of World War II, reported in recent issues of AIR FORCE Magazine. Mr. Leopold translated that outrage into action, writing letters to Rep. Benjamin A. Gilman (R–N. Y.), Sen. Daniel Patrick Moynihan (D–N. Y.), Sen. Alfonse M. D'Amato (R–N. Y.), and President Clinton protesting the exhibit's political biases and lack of context. Those letters bore fruit in a face-to-face meeting with Representative Gilman, who promised to work to change the exhibit in the interest of historical accuracy.

The **Donald W. Steele, Sr., Memorial (Va.) Chapter** is working hard to ensure the success of its upcoming symposium, "Airpower and the Revolution in Military Affairs." The symposium is being held with the cooperation of the office of Deputy Chief of Staff for Plans and Operations Lt. Gen. Joseph W. Ralston. Deputy Secretary of Defense John M. Deutch and Vice Chairman of the Joint Chiefs of Staff Adm. William A. Owens are the invited guest speakers at the day-long

Dottie Flanagan Retires After Thirty-Six Years

Last autumn, Dorothy L. Flanagan retired as director of Protocol for AFA. She joined the staff in November 1958, leaving her position in the Office of the Secretary of the Air Force, and immediately went to work on staging the Association's 1959 World Congress of Flight. Throughout her years of dedicated service, she worked directly with key military and civilian leaders at all organizational levels of the Air Force, aerospace industry, and AFA.

Known for her uncanny memory of people, places, and events, she was often affectionately called "Miss AFA." Among her many awards are the Air Force Exceptional Service Award (the highest recognition a civilian can achieve), ANG's Eagle Award, the Office of Air Force Public Affairs' Quill Award, a special award from the Air Force Academy, and an AEF Jimmy Doolittle Fellowship and AFA Medal of Merit from the Iron Gate Chapter. At the 1994 National Convention, in the crowning achievement of her career, she became only the fourteenth individual in AFA history to receive a Gold Life Member Award. Dottie is now enjoying her retirement in Washington, D. C.

—John O. Gray

event, scheduled for January 17 in Arlington, Va. Senior military and civilian leaders from all the services have been invited to review such topics as "The Future of Airpower" and "Service Perspectives on the Revolution in Military Affairs." For more information, contact Association Services at (703) 834-1735.

Martin T. Capriglione has brought to the state level the energy he used in support of aerospace education as **Sal Capriglione (N. J.) Chapter** president. The newly elected state vice president manned a booth recently at McGuire AFB, N. J., promoting AFA membership and the "Visions of Exploration" program, dispensing membership applications and copies of AIR FORCE Magazine.

Have AFA/AEF News?

Contributions to "AFA/AEF Report" should be sent to Dave Noerr, AFA National Headquarters, 1501 Lee Highway, Arlington, VA 22209-1198. ■

Unit Reunions

American Defenders of Bataan and Corregidor. National convention, May 25–29, 1995, at the Sheraton-Tara Hotel in Braintree, Mass. **Contact:** Charles L. Pruitt, 1231 Sweetwater-Vonore Rd., Sweetwater, TN 37874. Phone: (615) 337-5190.

Aviano Reunion Ass'n. July 31–August 3, 1995, in Sun Valley, Idaho. **Contact:** Tama Tillman, 3214 Fox Lake Dr., Tampa, FL 33618. Phone: (813) 963-3083.

Field/Mobile Training (3499th Mobile Training Wing/Field Training Wing, 3785th Field Training Group/Wing, 396th Field Training Group, or 82d Field Training Group). May 25–28, 1995, at the Ramada Inn in Wichita Falls, Tex. **Contacts:** Leo V. Watts, #2 Kevin Cir., Wichita Falls, TX 76306. Phone: (817) 855-2906. DSN 736-4704. Lt. Col. James Kincaid, USAF (Ret.), 511 S. Hilltop, Burkburnett, TX 76354. Phone: (817) 569-0408.

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.

Willow Run Personnel (1942–45). Fiftieth-anniversary reunion planned for those who worked or were associated with the Ford Motor Co. Willow Run, Mich., plant or Romulus Airfield, Mich., Ferry Command, August 12, 1995. **Contact:** Col. Robert J. Blodgett, USAAF (Ret.), 2701 McNeil St., Raleigh, NC 27608.

12th/15th Air Force (Italy). Fiftieth-anniversary reunion, April 19–May 7, 1995. **Contact:** Costa Chalas, 64 Trapelo Rd., Belmont, MA 02178. Phone: (617) 484-5620.

Aviation Cadet Class 43-E (Southeast and West Coast Training Commands). May 18–21, 1995, in Albuquerque, N. M. **Contact:** Paul J. Murphy, 7013 Bellrose Ave., N. E., Albuquerque, NM 87110. Phone: (505) 884-5687.

52d Troop Carrier Squadron/63d Troop Carrier Wing. June 2–5, 1995, in Greenville, S. C. **Contact:** Fred Schwartz, 208 Devon Dr., Mauldin, SC 29662. Phone: (803) 288-1281.

Aviation Cadet Navigator Class 61-09 (Harlingen AFB, Tex.). Planning a reunion for summer 1995. **Contact:** William R. Day, 2654 N. Nugent Rd., Lummi Island, WA 98262. Phone: (206) 758-2177. Fax: (206) 758-7549.

66th Fighter-Interceptor Squadron (Elmendorf AFB, Alaska). February 27–March 3, 1995, at Harrah's Casino Hotel in Laughlin, Nev. **Contact:** Jerry Zinkan, 3941 S. W. 317th St., Federal Way, WA 98023. Phone: (206) 927-9338.

69th Fighter-Bomber Squadron (Korea). June 15–18, 1995, in Charleston, S. C. **Contact:** Roger Warren, 7550 Palmer Rd., Reynoldsburg, OH 43068. Phone: (614) 866-7756.

3275th Military Training Wing, ATC/3275th USAF Hospital. Seeking permanent party personnel who were stationed at Parks AFB, Calif., in 1955 for a fortieth-anniversary reunion in 1995. **Contacts:** Lt. Col. Paul B. Demitriades, AFRES (Ret.), 2254 Evergreen Point Rd., Bellevue, WA 98004-2341. James P. Darrah, 3830 Portsmouth Point, Stockton, CA 95219. Phone: (209) 951-6556. ■

Bulletin Board

Seeking the owner of a silver **aircrew bracelet,** found in the Belgian Ardennes region, inscribed **"Leo Friend** G. R., SN A0696692." **Contact:** Erwin H. Eckert, 13607 Topper Cir., San Antonio, TX 78233-4031.

To return scrapbooks, photos, and letters found in an attic, seeking the whereabouts of **Capt. Alvin Loveless.** He completed a camouflage course at March Field, Calif., in August 1943 and then served in England. **Contact:** James W. Rau, 102 S. Third Ave., Alpena, MI 49707.

Seeking contact with or information on **Capt. Philip C. Gast,** who was stationed at RAF Bentwaters, UK, and whose F-101 has been found off the coast of Suffolk. **Contact:** Mark Murphy, BBC Radio Suffolk, Broadcasting House, St. Matthew's St., Ipswich IP1 3EP, UK.

Seeking a 1950s-era photo of the **Brookley AFB,** Ala., hospital. **Contact:** Norma Matthews, 2478 Wasabinang Rd., Hastings, MI 49058-8912.

Seeking contact with **Sue C. Gerard** of Columbus, Ohio, and **Vincent M. Gerard** of Dublin, Calif., who were stationed at Carswell AFB, Tex., Andersen AFB, Guam, and Castle AFB, Calif., in the late 1970s. **Contact:** MSgt. Philip Horn, USAF (Ret.), 65 Dorothy Lane, Stafford, VA 22554-1598.

Seeking aviators' **wings, badges,** and the stories that go with them, from World War II or earlier. **Contact:** Maj. Jack Else, USAF (Ret.), 1307 Main St., Bastrop, TX 78602.

Seeking anyone who knew **TSgt. Russell R. Fyan,** 600th Photo Squadron, Combat Camera Division, KIA April 26, 1968, in Vietnam. **Contact:** Rex A. Fyan, Sr., 6460 Middle Lake Rd., Twin Lake, MI 49457.

Seeking contact with anyone who knew **PFC Frederick William Weber** of Buffalo, N. Y., or who participated in the invasion of **Saipan** in June 1944. Also seeking information on the

Bulletin Board

696th Signal Air Co. Contact: Juli Anne Weber, 316 California Ave., Suite 246, Reno, NV 89509.

Seeking information on **twins in combat together** in the same crew and plane. **Contact:** William M. Miller, 440 Hostetter Dr., Millersville, PA 17551.

Author seeks color and black-and-white **photos,** showing camouflage, markings, insignia, and colors of any combat or noncombat aircraft from any country that served with USAAF, 1941–47. **Contact:** Robert D. Archer, 14241 Rincon Rd., Apple Valley, CA 92307-5767.

For a book, seeking historical information, names of squadron commanders and key personnel, and descriptions of events and incidents involving the **F-89 Scorpion. Contacts:** Marty Isham, 1342 Nay Ct., Las Vegas, NV 89104, or David R. McLaren, 1709 W. Fayette Ave., Springfield, IL 62704-2308.

Seeking the whereabouts of **SSgt. Willard R. Sweet, Jr.,** originally from Cranston, R. I., who was with the 486th Bomb Group, Sudbury, UK, 1944–45. **Contact:** Charles O. Steinmetz, P. O. Box 89, Jasper, TX 75951.

Seeking an American serviceman stationed in the Aston area of Birmingham, UK, in summer 1944, who knew **Doris Florence Green. Contact:** J. V. Gill, 43 Scarf Rd., Poole, Dorset BH17 7QG, UK.

Seeking original black-and-white negatives and color slides of US **military aircraft** from 1930 to the present. **Contact:** Lionel N. Paul, 35 Isaac Bradway Rd., Hampden, MA 01036.

Seeking a **USAF car decal. Contact:** H. S. Loeppky, 843 Royal Oak Ave., Victoria, British Columbia V8X 3T3, Canada.

Seeking information, including the squadron and group number, aircraft number, missions, and markings, of the **B-17G *Stage Door Canteen.*** Also seeking information on **Col. Harry P. Leber** of New York city. **Contact:** Walter Paul Nino, 545 W. 164th St., #3-I, New York, NY 10032-4939.

For an Air Force **explosive ordnance disposal** history, seeking photos, stories, unit histories, logbooks, and journals from Army Air Corps bomb disposal and Air Force EOD personnel. **Contact:** CMSgt. Marshall B. Dutton, USAF (Ret.), 150 Grand View Ave., Valparaiso, FL 32580-1602.

Collector seeks **pilot's helmet,** type HGU 2 A/P, HGU 22, or HGU 55/P, size large. **Contact:** Jack Sullivan, 523 Lake St., Oak Park, IL 60302.

Seeking an American serviceman who knew **Eunice Dorothy Card** in 1950–52 in Romford, Essex, London, UK. **Contact:** M. Brady, 239 A New X Rd., London SE14 5UH, UK.

Seeking contact with **Frank Horvath** and family (Karla, Christopher, Joshua, and Joey), originally from Ohio, who were stationed at Dover AFB, Del., 1982–85. **Contact:** Deborah Hulett, 9347 Victoria St., Manassas, VA 22100.

Seeking contact with or information on **Lt. Col. (Dr.) James M. Davis,** who was at Fuchu AS, Japan, from 1955 to 1957, before transferring to Hawaii. **Contact:** Yasuyuki Nakamura, 5-1-505 Hirano-cho, Kagoshima-shi 892, Japan.

Collector seeks military **patches** for 16th, 17th, 18th, 19th, and 21st Air Forces. **Contact:** MSgt. Joseph S. Guido, USAF (Ret.), 3030 Zephyr Dr., Colorado Springs, CO 80920.

Researcher seeks unit assignment (at time of loss) of USAF personnel who died in **Thailand** during the Vietnam War. **Contact:** David W. Schill, 132 Harding Ave., Moorestown, NJ 08057.

Seeking the whereabouts of Air Corps Supply Officer **Capt. Max Griffith** of the Eastern Flying Training Command, 2151st AAF Base Unit (Contract Pilot School, Primary), Avon Park, Fla., 1941–44. **Contact:** Garner P. Emerson, 671 Jamaica Cir., Lakeland, FL 33803.

Seeking contact with **366th and 352d Fighter Group** and antiaircraft battery personnel who witnessed a Luftwaffe attack on Asche, Belgium, on January 1, 1945. **Contact:** Robert H. Powell, Jr., 1545 Rainier Falls Dr., Atlanta, GA 30329.

Seeking historical information on **4600th Air Base Wing,** Ent AFB, Colo. (1960–63); **33d Air Base Squadron,** Vietnam (1964–65); **57th Combat Support Squadron,** Paine Field, Wash. (1965–66); and **4756th Air Base Group,** Tyndall AFB, Fla. (1966–67). **Contact:** TSgt. Justin L. Dingman, USAF (Ret.), 3719 N. Huson St., Tacoma, WA 98407-4121.

Seeking contact with B-25 pilot Flt. Officer **Robert Schroeder,** copilot Flt. Officer **Ken Habek,** and bomber/navigator **Lt. Ben Bishop** of the 75th Bomb Squadron, 42d Bomb Group, 13th Air Force, Palawan, the Philippines, during World War II. **Contact:** John E. Ropp, P. O. Box 40712, Jacksonville, FL 32203.

Collector seeks **patches** from the 67th Special Operations Squadron, RAF Alconbury, UK. **Contact:** Jimmy Fallon, 3025 S. E. Burton St., Topeka, KS 66605.

Seeking contact with former 344th Bomb Squadron, 98th Bomb Group (World War II), members **Lt. John Frazier, Lt. Rudolph Woidill,** and **TSgt. Arthur Crevenston,** who were stationed in Lecce, Italy, 1944–45. **Contact:** TSgt. Bernard P. Katz, USAF (Ret.), 141-14 25th Ave., Whitestone, NY 11357.

Seeking contact with Air Force exchange officers who worked with the **Navy RA-5C Vigilante.** Also seeking **Eugene Quist,** who graduated from the Air Force Academy in 1970 and who flew SR-71s. **Contact:** Lt. Col. George Cannelos, 3120 W. 79th Ave., Anchorage, AK 99502.

Seeking information on and names of American units that were stationed at **Pont-Saint-Vincent, Meurthe-et-Moselle,** France, between May and September 1945. **Contact:** Mrs. Maurice Colette, 7 Rue Michelet, 57365 Ennery, France.

Seeking photos of **DC-3/C-47s** with unusual modifications or configurations. **Contact:** Col. C. V. Glines, USAF (Ret.), 1531 San Rafael Dr., Dallas, TX 75218.

Seeking back issues of Air Defense Command's ***Interceptor* Magazine.** Also seeking fighter-interceptor squadron patches and photos. **Contact:** MSgt. Dave Petzoldt, 805 Magnolia Shores Dr., Niceville, FL 32588-0113.

Seeking contact with anyone who knew B-17 crew chief **SSgt. Raphael "Ray" Fenwick** or who was assigned to the **815th Bomb Squadron,** 483d Bomb Group, World War II. **Contact:** SSgt. Timothy A. Fenwick, 39 Maury Ave., Newport News, VA 23601-2133.

Seeking the whereabouts of **Lt. Dennis G. McKinley** and wife Mickey, who were stationed at San Marcos AAF, Tex., in August 1944. **Contact:** Clark R. Waldmier, 3269 Fields Ct., Decatur, IL 62521.

Seeking contact with pilots, ground crew, and RCAF T-33/F-86 and F-15 unit members who have historical information on or photos of **Decimomannu AB, Italy,** 1955–95. **Contact:** Alessandro Ragatzu, Via Sulcitana 134, 09030 Elmas, CA, Italy.

Seeking a pair of World War II **aircraft observer wings. Contact:** Ray Carter, 1400 N. Woodlawn St., #7E, Wichita, KS 67208.

Seeking color **patches,** stickers, scarves, and pilot name tags from F-16 units. **Contact:** Christian Sabon, 23815 Manila, Clinton Township, MI 48035. ■

If you need information on an individual, unit, or aircraft, or if you want to collect, donate, or trade USAF-related items, write to "Bulletin Board," Air Force Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Letters should be brief and typewritten; we reserve the right to condense them as necessary. We cannot acknowledge receipt of letters. Unsigned letters, items or services for sale or otherwise intended to bring in money, and photographs will not be used or returned.—THE EDITORS

Pieces of History

Photography by Paul Kennedy

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Memorabilia courtesy US Air Force Museum, Wright-Patterson AFB, Ohio

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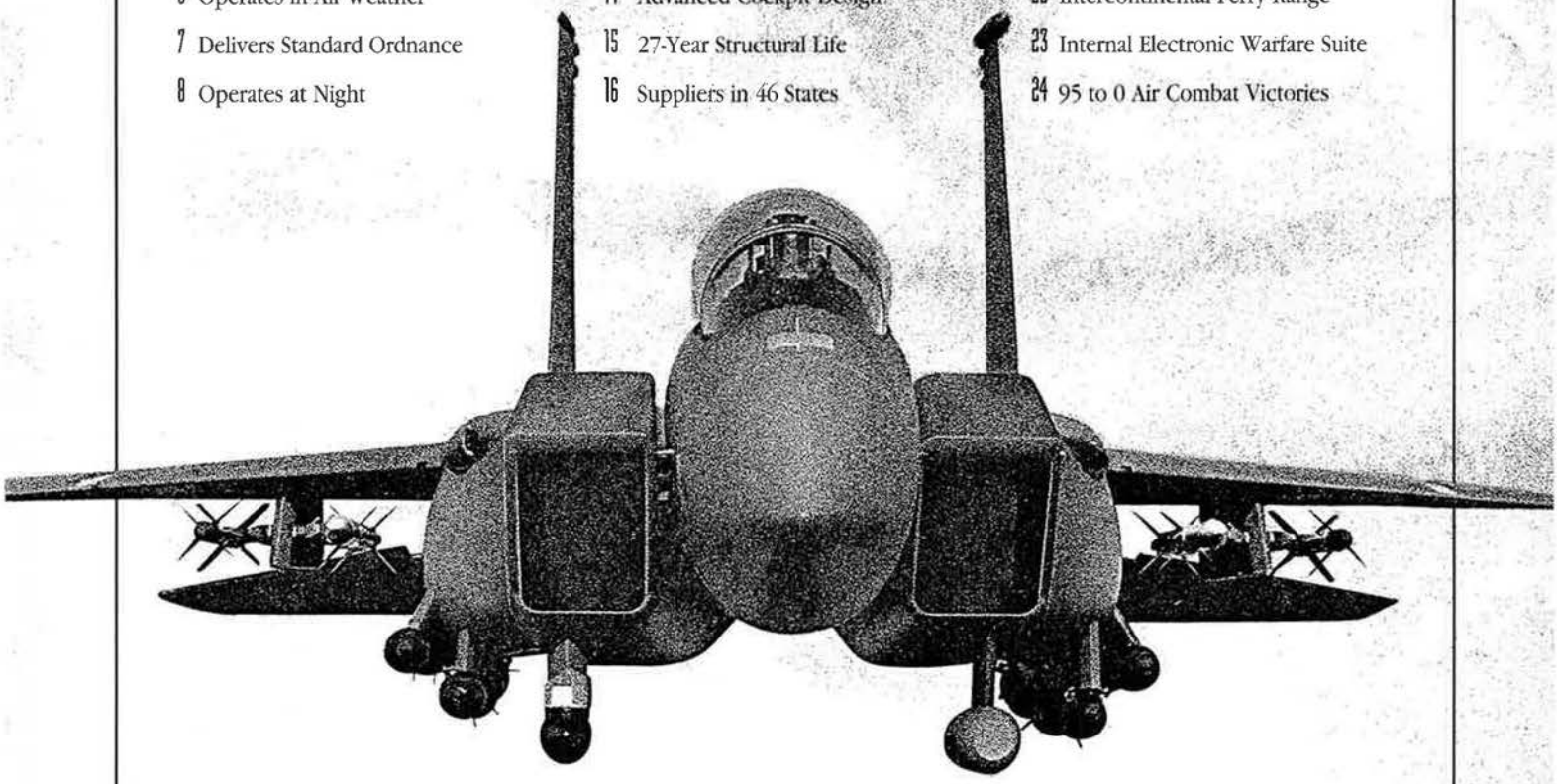

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