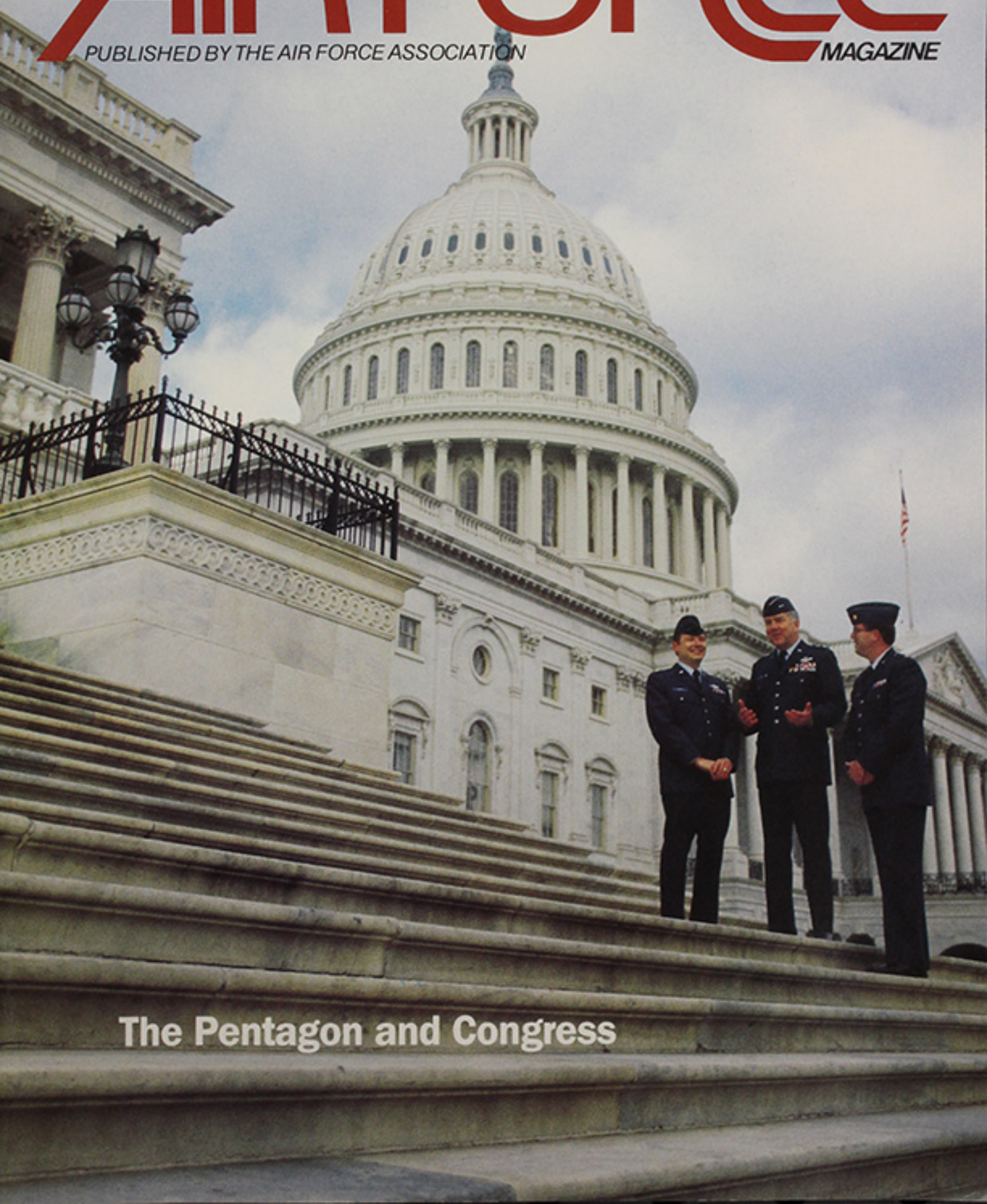


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MAGAZINE

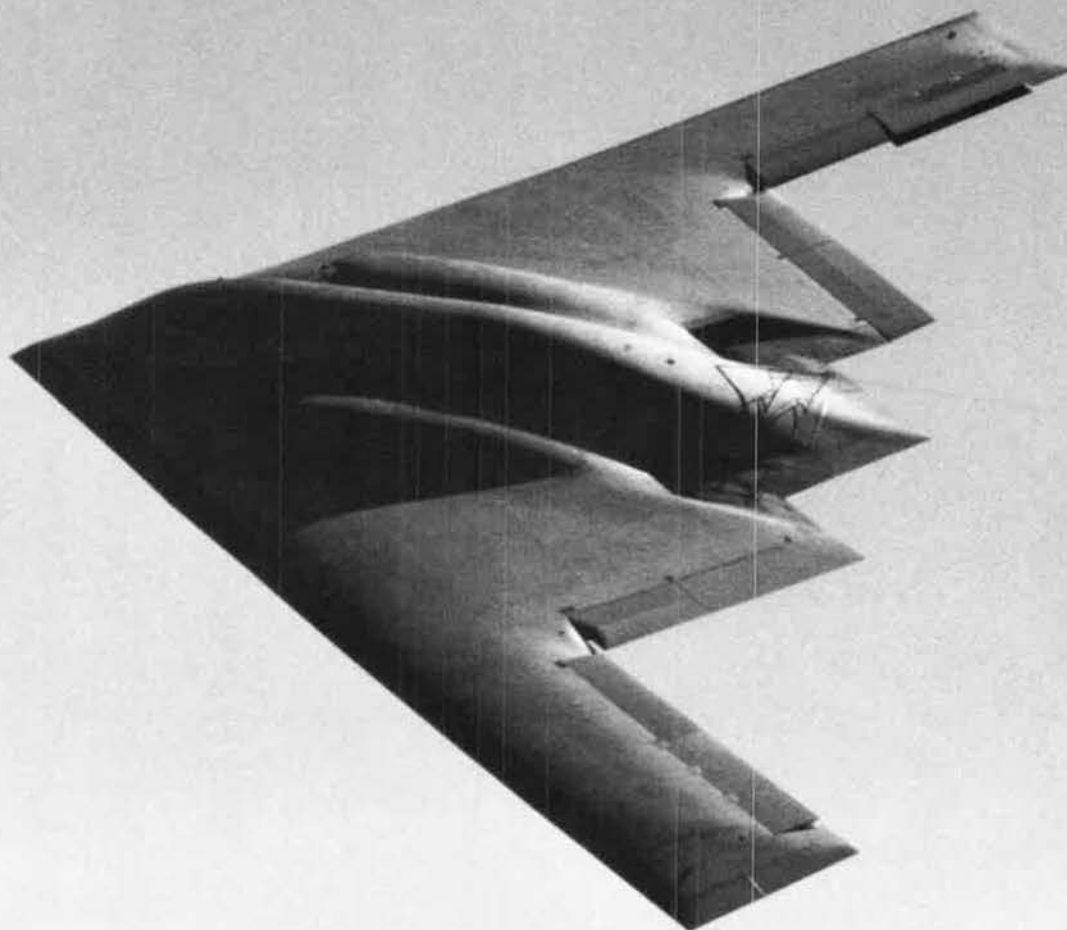


The Pentagon and Congress

"The confidence that I had a year ago in the simulator when I said, 'Yeah, that's going to be a good airplane to fly,' has proved to be that in the air."

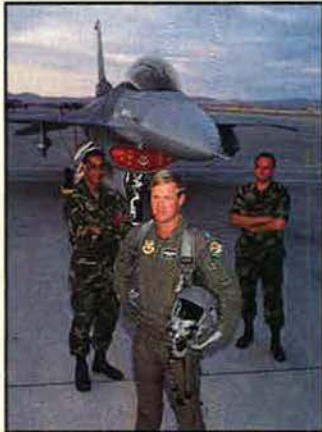
NORTHROP

People making advanced technology work





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About the cover: With the volatile world situation rapidly changing defense priorities, these three legislative liaison officers will be busy trying to find common ground with Congress. From left, Maj. Jeffrey A. Sponsler, Maj. Gen. Burt Moore, and Maj. Charles J. O'Connor III. Cover photo by Guy Aceto.

The Pentagon and Congress

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By John T. Correll, Editor in Chief

Butcher Knives Won't Do It

ON THE COVER of its December 11 issue, *US News & World Report* asks: "After the Cold War, Do We Need an Army?" The editors conclude that the nation ought to keep the Army—but not in its present size and configuration.

Elsewhere, doubts are rising thick and fast about the continued requirement for aircraft carriers, ballistic missiles, fighter wings, and manned bombers. Pundits argue about whether the defense budget should be cut by a quarter rather than by half.

The underlying notion here is that the US military may no longer have much of a mission left. A popular view of the future imagines armed forces that are small, simple, and cheap, designed mainly for commando raids and little dustups in remote corners of the globe.

That vision is flawed. It does not nearly cover the requirements of national security, and it underestimates the expense and difficulty of so-called "low-intensity conflict."

US interests continue to expand internationally. What happens abroad is of more direct consequence to us than it was as recently as ten years ago. Our interests need more protection than we can give them with hang gliders and butcher knives.

The TASS News Agency announced in Moscow on December 15 that the personnel strength of Soviet armed forces is 3,993,000. That figure is 1,037,000 lower than the Pentagon's latest on Soviet manpower. By either count, it is a large force, and it is well equipped with modern tanks, missiles, and combat aircraft.

If history were frozen at this moment, the accurate number might be of limited concern. The Soviet Union is determined to pacify the West. The last thing it wants is a confrontation. But who knows how soon the great nations might find their objectives or interests in conflict again? The military balance would then matter very much.

The threat is not disappearing so much as it is diversifying. Numerous Third World countries have ballistic missiles, and others are acquiring

them. Nuclear weapons technology is spreading. The time is not too far distant when some future Khomeini or Qaddafi will be able to target the site of his choice in Nebraska as readily as the Soviet Union can today.

As history demonstrated in Vietnam and Afghanistan, small nations can fight rather effectively. The superpowers have no monopoly on high-technology weapons. Paul D. Wolfowitz, Under Secretary of Defense for Policy, reminds us that "potential adversaries in the Third World are no longer trivial military problems," noting that Iraq has almost as many tanks as West Germany does.

The threat is not disappearing. It's diversifying. US forces of the future may be smaller, but they cannot be very simple or very cheap.

We are on the threshold of epic change. World population will double by the year 2050, with developing nations accounting for ninety-one percent of the increase. Nigeria, Pakistan, Brazil, and Indonesia will have surpassed the US in population, and Bangladesh, Iran, Ethiopia, and the Philippines will be immediately behind us on the list. We are about to see a redistribution of power—and aspiration for power—worldwide and an enormous shift in the demand for resources.

The visionaries are correct on one point. US armed forces will become smaller. Right or wrong, the nation has reached a consensus to reduce its military strength. But as we will discover eventually, the major missions—from nuclear deterrence to the clash of tank armies—remain. It

may be necessary, however, to employ force with more precision and from a greater distance.

Even before the demise of the Soviet empire in eastern Europe, the United States was insisting that its armed forces take a prominent role in the war on drugs. Judging from expressions of public approval, the recent operation in Panama is an example of the kind of action the nation wants, and perhaps expects, from the military. That operation may have resembled "low-intensity conflict" in that there was restraint in tactics, but it was conducted by a large force with standard military equipment and the advantage of a US military base in the area.

We cannot count on overseas bases for the forward deployment of our forces in the future. It will become necessary to project American power from American shores. Aircraft carriers may be the answer in many instances, but they are limited in the force packages they can carry, and they cruise at speeds of only thirty knots. There will be a premium on forces with long range and high yield, getting by with austere logistics and support.

Greater accuracy will be important, too. Such terms as "surgical" strike and "pinpoint accuracy" are too often used as a careless sort of shorthand to mean that today's weapons are vastly more accurate than their predecessors. Taken literally, those labels overstate it quite a bit—especially on a dark night in a strange place. Tomorrow's forces will need a precision that approaches the "surgical" and the "pinpoint," and they won't get it with bargain-basement technology.

From top to bottom, the forces of the future will have to be much better than those of the present. As overall numbers decline, there will be progressively less tolerance for marginal quality or capability.

Realistic security requires a balanced mix of land, sea, and air forces, well-trained and superbly equipped. They may be smaller, but it is unlikely that they will be either very simple or very cheap. ■

Actual flight test photo AGM-130, Eglin AFB, Fla.



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Fort Irwin Omissions

In your article "All Together at Fort Irwin" [see December 1989 issue, p. 38], you quoted Lieutenant Colonel Knight as saying, "The NTC [National Training Center] provides pilots and ALOs [Air Liaison Officers] with the most realistic CAS [Close Air Support] environment in the US." True statement (in peacetime). However, your readers should know that along with that battalion ALO is an NCO who is usually qualified and certified to control air strikes.

Further on, the article states that the Air Force ground element takes the form of ALOs assigned to specific units. A half-true statement. The battalion ALOs live on Air Force bases and are assigned against battalion slots. Also, they are limited, by Army-Air Force agreement, to forty-five days per year with "their" Army units. We Tactical Air Command and Control Specialists (TACCS, also known by Air Force Service Code 275XO), along with brigade and division ALOs, live on the Army installations with the Army units and work with them on a day-to-day basis. Some of us are qualified as Ground Terminal Attack Controllers (GTACs). All personnel who perform GTAC duties (ALOs, Ground Forward Air Controllers, and Terminal Attack qualified 275XOs) are GTACs. We 275XOs have to know all the things that ALOs do and can do the job just as well. I can't blame you for not knowing this, as most of the Air Force doesn't know it either.

Apart from the above missing information, the article did a good job. I have fought my way through four NTC rotations with "my" battalion and applauded you for getting out the word on the NTC.

TSgt. Frank Gibson,
USAF
Fort Knox, Ky.

Once again an Air Force-related publication (you are by far not the first) failed to state the facts correctly. For the record, I would like to recognize the only combat arms career field that lives and operates with the US

Army. I define combat arms with the DoD definition. . . . The actual Air Force ground element for army combat units is called a Tactical Air Control Party (TACP). A battalion level TACP consists of one captain or 1st lieutenant pilot, one senior 275XO, and one junior 275XO. The battalion ALO is not "assigned" to specific army units. The 275XOs are.

The next sentence should read: "The Ground Tactical Air Controllers (GTACs) are the eyes and ears. . . ." GTACs are any persons (ALOs or certified 275XOs) who control fighters. An Enlisted Terminal Attack Controller (ETAC) is a highly trained and certified 275XO who has volunteered to assume the responsibilities associated with controlling fighters. . . .

Having just completed one of numerous NTC rotations, I can testify that the GTACs (NCOs and officers alike) controlled equal amounts of fighters and did equal amounts of planning and coordination with the respective Army staffs.

In addition to those duties, the 275XO must be an expert in soldier skills and duties, combat doctrine, ground radio communications, and methods of operations of his Army unit and must be familiar with, if not qualified in, Army weapons and weapon systems. He must use this knowledge to advise and assist his ALO and Army personnel to ensure cohesion in battle.

After the rotation ends, most battalion ALOs return to the cockpit. The

275XOs return to the Army posts on which they are stationed and live with the units to which they are "assigned" in order to continue the liaison function and coordination for interservice support.

The 275XOs usually specialize in at least three of the following areas: infantry (light, mountain, mechanized, and ranger), armor, air assault, airborne, and special operations. The 275XO is the only career professional of the only combat arms career field performing the Army liaison duty.

My intention in this letter is not to belittle anyone, but to inform your readers.

SSgt. Benjamin K. Johnson,
USAF
Fort Polk, La.

Becoming Skilled and Prepared

I am responding to your very interesting editorial, "Unskilled and Unprepared," in the October 1989 issue [by John T. Correll, p. 6]. As the years go by, the frequency of articles such as yours, pointing out the sorry state of the educational system's performance in the US, has increased notably. The disparity between people educated in other industrialized countries around the world and those educated in the US seems to be increasing. While I can't claim any firsthand knowledge of the success of foreign schools, I have directly seen the results in contact with their graduates.

In my work I have dealt with and worked with engineers from overseas, and in many cases these people have shown a mature, professional competence, overshadowing the folks trained in the US. The apparent difference seemed to be in the depth of education—having enough understanding of more than just a very narrow engineering discipline to see possibilities and to be flexible in ways that the less-educated couldn't.

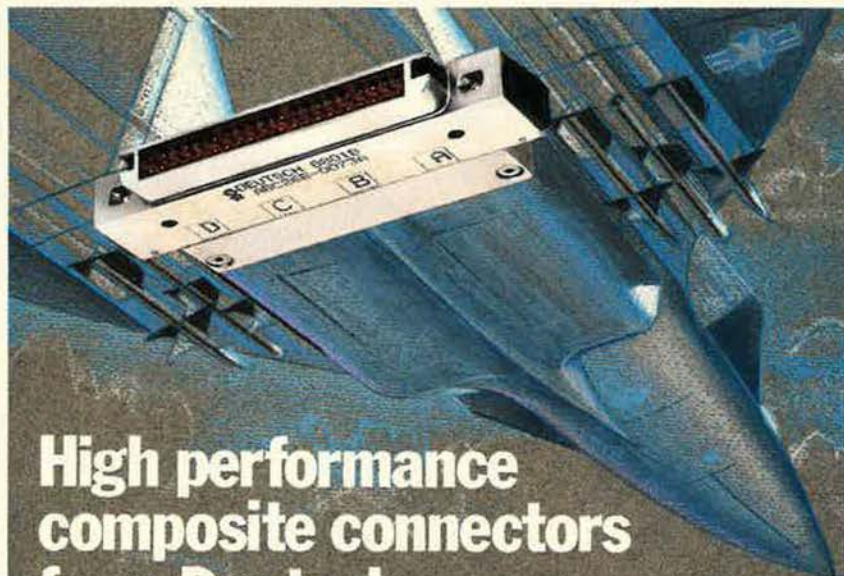
I feel that schools from elementary through graduate school don't have the proper priorities to get the job done. In the public school system, the goal seems to be "Don't rock the

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boat, produce graduates, and get the numbers out the door." The sciences are shamefully neglected because it isn't a priority of the school to do a good job in these fields. It is a priority to keep some semblance of order, to keep track of the kids, and to not ruffle the feathers of all those parents who would raise a holy stink if Johnny failed something or, worse, was held back a year. It is a priority to keep kids from dropping out by making it so easy that even the laziest can squeak by. (Just keep 'em entertained—they don't fuss, the parents are happy, and the state and federal support keeps rolling in.)

I don't believe that the grass-roots school board is going to solve this one. Here is a need, in my opinion, for some leadership from at least the state level and maybe the federal level. Broad policies need to be set as standards for schools to meet. Consistency of expectation is necessary to help strive for uniform results across the country. While the White House may not be able to solve this one for us, I can't see how this job can possibly be tackled by the individual schools because of the complexities of the problem. The problems of how financial support is to be provided, of teacher education, of educational standards for the classroom, and of the political and sociological repercussions when Johnny flunks must be dealt with. Most of the parents I know are so busy trying to make a living that they are too tired (or uninterested) to insist on and help with the education of their children.

It is easy to say, "Parents must get involved, or it won't happen." This would be great, but, like a lot of other wishes, it probably won't come to pass. Here is a classic example of the question of which came first: To get parents' support, they must be well-educated enough to understand the problem and provide informed encouragement to their children. This will forever be an impasse until somebody takes some initiative and some heat from the public who don't understand, and don't want to understand, why their kids have to work so hard in school and why it is going to cost more. It has to start somewhere, and it looks to me like [we need] government leadership to get started. Once you get a generation of decently educated people, the ball should keep rolling of its own momentum. The parents will understand the requirement for their kids to be educated. They will understand the competitive nature of the US in the world marketplace and realize that in the job market we are truly competing worldwide. . . .



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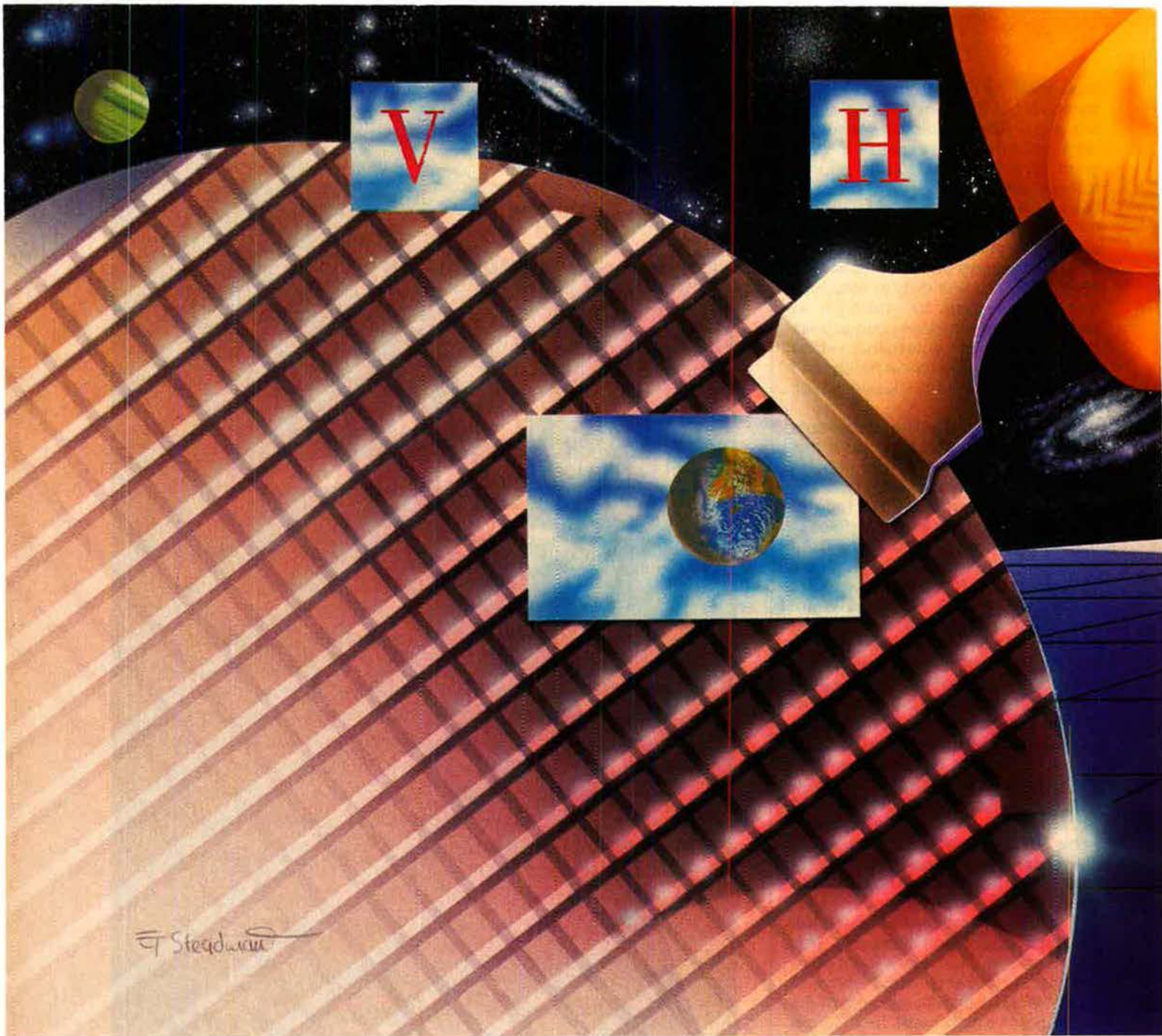


Mr. Correll and I agree that something must be done; we don't agree on implementation. I can't see that it will happen. It's going to have to be planned, fought for, paid for, and developed for continuous improvement—the same way you would run a business. This country is a business in the world, and as such it must be run efficiently and for a profit (positive balance of trade). Strong, hardheaded leadership is a necessary, vital ingredient, a key to turning around the educational system and a lot of other problems in the US. In my opinion, it

would be in their best interest for all of the armed services and high-tech industries to become actively involved in pushing the needed changes. If you wait for it to happen, the competition will put you out of business.

G. W. Goegelein
Phoenix, Ariz.

Unfortunately, I missed your editorial, "Unskilled and Unprepared," in the October 1989 issue. However, I did read, with great interest, the letters from Dr. Haas, Mr. Cordell, and Mr. Wineteer in the December issue per-



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Letters

taining to this editorial. . . . [See "Airmail," p. 8.]

Before I am labeled an "education-basher," let me assure you I am not. The existing American learning system is a system that we, as parents and consumers, have demanded. We ask that it respond to a culture that values individualism above all else, a political system that is predicated on participation, and an economy in which its revenue is the only tax over which we have some measure of direct control. It has met, and continues to meet, these demands. We demanded, the system supplied. Belatedly, we have discovered that we have not been informed consumers and that our demands have not met the needs of the constituents of the system, the workplace, or the world marketplace.

We must now revise our demands so that the learning system supplies a product that responds to these needs. Concurrent with these new demands, we must assume the responsibility to support this new learning system morally, philosophically, and fiscally. This will amount to a cultural change, or at the very least a reordering of priorities in the way we, as a nation, view education. Indications that nothing less than a cultural change will suffice are readily available in the content of parental arguments *against* increasing the length of the school year, *against* more homework, and *against* higher standards of achievement.

It is obvious that the nation is facing a multifaceted dilemma concerning the education of its citizens. The area that currently shows the most activity and promise is that of workplace literacy—an area in which the military is a recognized leader. It was discovered that workers in some key private industries were experiencing difficulty learning new methods and technologies. Labor and management jointly set about solving this problem by establishing corporate or industry-wide institutions that provide contextual, job-related, basic skills education, not to be confused with job-specific training. Their definition of "basic skills" continues to expand, now including such things as team-building and organizational, metacognitive, and interpersonal skills. Educational technology and innovative methods are employed to make learning possible and even enjoyable for those who have met with less than total success in the traditional system. As the programs mature, they are opened to the families of the workers, thereby addressing the intergenerational aspect

of the dilemma. The value of education is being rediscovered. I believe that this privately operated, and to a great extent privately financed, educational system is sowing the seeds of change necessary to enable our public learning system to become responsive to current and future demands.

There is no simple answer, no panacea to remedy our neglect of the public learning system. As easy as it is to backslide, it has taken two generations for high school students to reach our present [abysmal] position. Imagine the time, effort, and commitment required to regain the ground—and the students—we have lost. I, for one, think it's worth it.

Walt Dunlavy
Pittsburgh, Pa.

A Missed Anniversary?

I was appalled to read in the December 1989 anniversaries section that you found it important to carry the establishment of the 509th Composite Group on December 17, 1944, while totally ignoring another event that took place on December 17, which many notable historians deem to be more significant. Lest you forget, the Wright brothers flew on that date in 1903, and this old pilot, for one, thinks it is an anniversary of sufficient importance to be carried in a magazine published by the Air Force Association.

Col. Glenn L. Nordin,
USAF (Ret.)
Daedalus Flyer
Kelly AFB, Tex.

● *Since we began the "Anniversaries" section, readers have taken us to task for missing the anniversaries of everything from Octave Chanute's birthday to V-J Day. Careful reading of the section will show, however, that dates are only included at five-year intervals. Space is limited, and each month we try to present a mix of the significant, the unusual, and the interesting.—*

THE EDITORS

Erratum

Rep. John P. Murtha (D-Pa.) was misidentified in a photo caption on p. 105 in the "AFA/AEF Report" in the January issue. He should have been identified as the Chairman of the Defense Subcommittee of the House Appropriations Committee. We regret the error.

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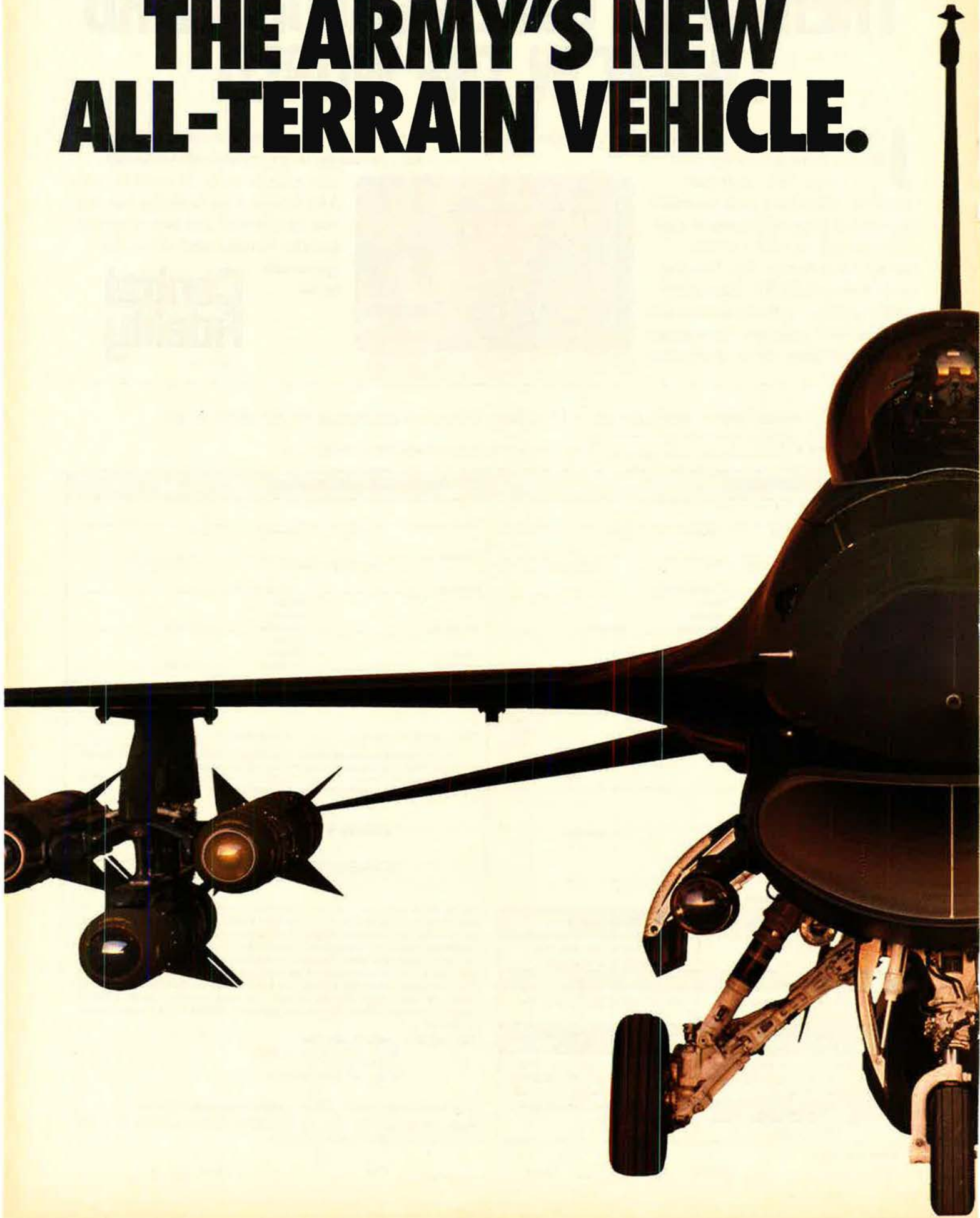
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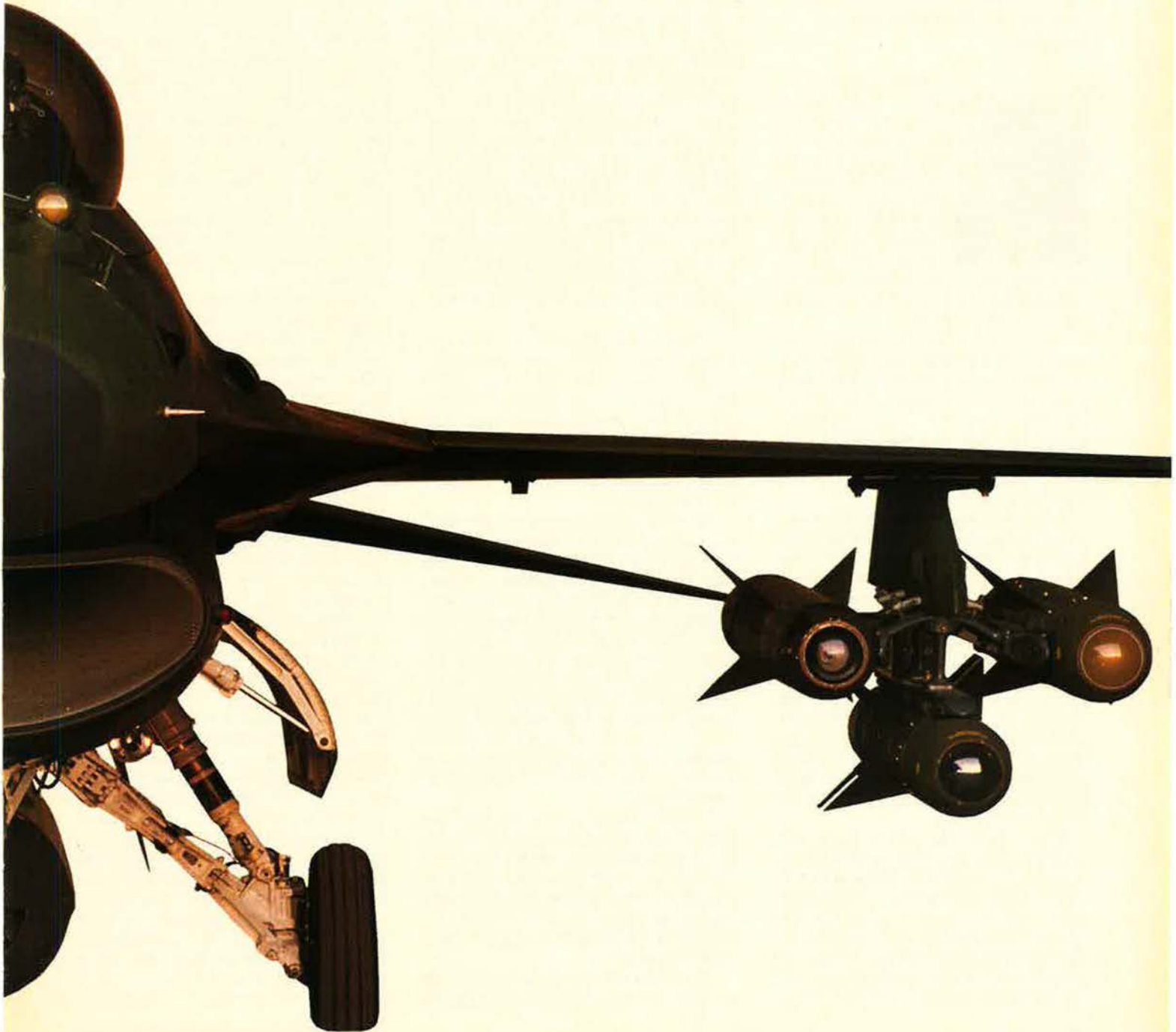
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GENERAL DYNAMICS



By Robert S. Dudley, Executive Editor

The Air Force's Quandary

USAF's top civilian leader says the service is now headed into a "transition year." But a transition to what? Air Force leaders must find an answer in the next few months.



Washington, D. C. Mark Twain once came up against a baffling question. "I was gratified to be able to answer promptly," the writer noted, "and I did; I said I didn't know." When Donald B.

Rice talks about the future of the Air Force these days, he sounds somewhat like Mark Twain.

The Air Force Secretary, meeting recently with reporters, was asked what in normal times would be an easy question: In five years, what will the Air Force look like? Times, however, aren't normal. Neither was his response. USAF's highest civilian leader promptly answered, in effect, that he didn't know.

Secretary Rice suggests that the Air Force of the mid-1990s, though modern, will be a substantially smaller, reshaped version of today's force. Pressed for specifics, however, he says this: "There's still a lot of thinking to do about how to do that. We certainly don't have a final blueprint at this point."

As the Secretary's words make clear, USAF today is in a quandary, with uncertainty surrounding questions as basic as force size, numbers of tactical fighter wings, even what relative emphasis to place on different USAF missions.

Don't fault Secretary Rice. The problem has become truly baffling, the result of an actual collapse of military budgets at home and the perception of a collapse of Soviet power abroad. The Secretary's words point up a danger and a reality. The danger is that USAF lacks a consensus plan for its future. The reality is that it must

devise one soon, or be overtaken by events.

The absence of a long-range USAF game plan to cope with the certain austerity of the 1990s was evident in the newest Pentagon budget, which Defense Secretary Dick Cheney will be defending before Congress in the months ahead. The Pentagon's spending blueprint seeks \$292 billion in new military outlays for the 1991 fiscal year, starting October 1.

Air Force planners spent recent weeks locked behind closed doors, struggling over what they could cut or cancel to meet sharply cut fiscal guidance given to the services late last year. That guidance called for the Air Force, Army, Navy, and Marine Corps to plan for reduced budgets in 1991 and a cumulative drop of \$180 billion in funding from planned 1992-94 levels.

The new budget, however, does not address most of the hard decisions, pushing them into the future. With few exceptions, USAF tactical, strategic, airlift, communications, and other critical programs remain intact, albeit with lower funding levels. Force structure might be cut, but not radically overhauled.

Conspicuously lacking are any startling new departures that might reveal the future shape of the Air Force. This was foreordained. Speaking weeks before the new Pentagon budget was unveiled, Secretary Rice made it clear that USAF couldn't alter course on such short notice. There were no easy choices, only difficult ones requiring formal review and analysis. In his estimation, 1991 would turn out to be a sort of "transition year," serving as a bridge between the Air Force of the 1980s and whatever comes next.

"I really want to emphasize," he said, "that [the latest budget] has to be understood as an exercise in doing the best we could in a relatively short period of time to deal with changed guidance based in part on rapidly changing world events and on economic realities.

"It still leaves a lot of questions that we're all going to have to be grappling

with—some of which are going to have to get at least a tentative resolution in the next few months."

Indeed, that reality now confronts Air Force planners not only in Washington but throughout the service. By April at the latest, all the military services must develop and submit their so-called Program Objective Memoranda for the Six-Year Defense Plan spanning Fiscal Years 1992-97. These POMs—the all-important spending proposals—will be based on drastically cut budget projections. Thus, the Pentagon's FY 1992-97 Six-Year Defense Plan is to be the first built around a revised set of US military strategies and assumptions about the nature of the Soviet military threat in the age of Mikhail S. Gorbachev.

"By the time the services submit the program objective memoranda to the [Defense] Secretary in the spring," declares Secretary Rice, "we [the services] are going to have to settle at least some of these choices about the shape of the future programs." It is Mr. Cheney, however, who will have the final say.

The general direction of that exercise, now under way throughout the Pentagon, is already apparent. Secretary Rice puts it bluntly: "To deal with a combination of [low] budget levels and a changing world scene, we are certainly going to have to downsize the defense establishment, and that means [cutting] the forces. We've got to be prepared to take the forces down to a level we can afford to keep, and at high quality."

In this exercise, the Secretary continues, "the big challenge" for the services will be to come up with a scheme that will enable the Administration to bring about the reductions "in a balanced way, . . . to take down . . . proportionately the overhead and infrastructure and support so that we can end up with the most military capability that we can buy the taxpayer."

Secretary Rice believes that, in Congress and in some Pentagon quarters, the temptation will be to take reductions most heavily in support and modernization programs.

But Mr. Cheney, he notes, has made a commitment, "which I strongly support," not to permit the military establishment to return to the hollow forces experienced in the 1970s.

In formulating the Air Force's new POM, says Secretary Rice, the service will focus most of its attention on four major areas.

"One, obviously, is the strategic nuclear forces," he explains. "A second is conventional airpower, a power projection capability. Third is our space activities. Fourth is our lift capability, our contribution to the capability to transport the forces wherever they might have to go in the world. None of those missions or needs will go away, though they may all be modified to some extent if favorable trends [in the Soviet Union and eastern Europe] continue."

What is the Secretary's thinking, at this time, about each of these Air Force activities?

● **Space Programs:** He is surprisingly bullish about space programs and operations, giving strong endorsement to programs that USAF has under way. The space programs, he notes, are principally devoted to surveillance, reconnaissance, and intelligence-gathering operations. Far from declining in importance, the ability to keep tabs on worldwide military forces and threats is likely to grow even more critical. "In the uncertain and perhaps unstable world that we are facing in the future," says the Secretary, "there is certainly going to have to be continued emphasis on and probably investment in those kinds of capabilities."

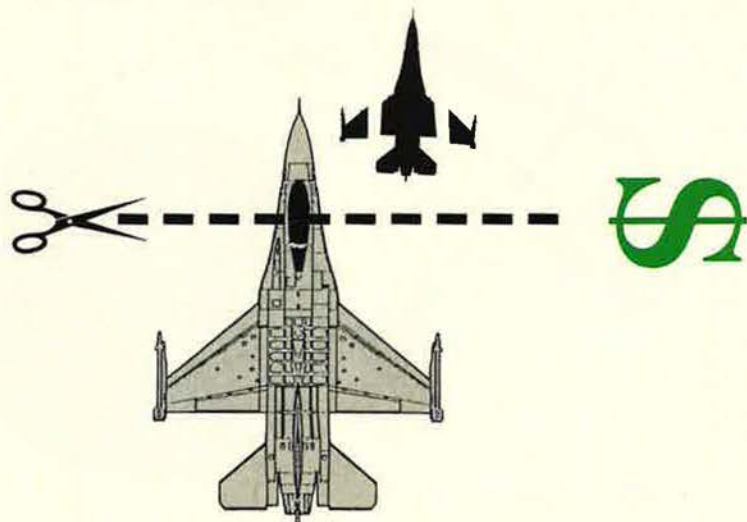
● **Strategic Forces:** Secretary Rice believes that the future shape of USAF's strategic armory will be dictated by the eventual outcome of superpower negotiations, and he appears content to stick with current modernization programs until then. "I think the strategic nuclear part is clearly going to get worked out in the process of a START [Strategic Arms Reduction Talks] Treaty," he explains. "That will be the mechanism that will finally set the parameters under which the strategic forces get planned." This approach, however, appears to leave the strategic force planning process somewhat in limbo.

● **Airlift Forces:** Current projections, the Secretary suggests, do not justify any major reduction of Military Airlift Command assets. He says he would like to "preserve" the airlift structure. However, he adds, the size and shape of USAF's mobility forces will have to mesh properly with "missions assigned to the conventional forces and the range of possi-

bilities and scenarios that the conventional forces have to deal with." If NATO's reinforcement requirements decline, for instance, USAF airlift may also be trimmed.

● **Tactical Forces:** The Secretary points to these types of units as being subject to the most sweeping reconsideration by the Air Force brass. "The conventional forces, of course, are going to be, in some sense, most directly affected by the kinds of changes we see in the world," he states.

lift, carry out some remixing of strategic forces consistent with the provisions of a START agreement, and accept gradual reductions in fighter wings and support. "I think that would be a reasonably accurate recasting of what I would call a first cut at trying to think this problem through," he says. "I really don't think of it in terms of relative emphasis or deemphasis [of forces] so much as trying to design and size each one against the mission and against the needs in each area as we reset the



He emphasizes that the US will clearly have a "continuing commitment" to the defense of western Europe, probably in any circumstance short of a total withdrawal of Soviet forces from eastern Europe and the evaporation of Soviet power. Even so, if one extrapolates from current trends to project the nature of the Soviet threat in years to come, "it would in fact be a world in which the requirement for forces for the defense of the center region in Europe would clearly diminish. So that's an area where, assuming these trends continue, assuming that a Conventional Forces in Europe agreement is successfully negotiated as we expect, inevitably there will be some reduced emphasis."

Secretary Rice makes clear, however, that he is in no rush to radically reduce the size of USAF's tactical air forces. His view: "It's pretty early to tell, or to settle on, what ought to be the sizing criteria for the forces in this future world. . . . We've got a lot more work to do. It is worth emphasizing that there are a lot of implicit assumptions about where the world is going. We have to keep reminding ourselves that we're only seeing the front end of it at this point."

In sum, the Secretary appears to be saying that he is prepared to hold the line on USAF space programs and air-

national security strategy and defense program."

The controversy over the shape of the Air Force won't be settled anytime soon. The service POMs will be the basis for what are certain to be protracted internal Pentagon negotiations. For the rest of the year, there will be work on a new, biennial 1992-93 budget, to be submitted next January, and on the budgets for the years beyond. The question of how to apportion the budgetary pain among and within services will be thrashed out between now and next fall. Arguments are certain to be heated.

Even with all the soul-searching going on within the Air Force, there is virtually no controversy to be found with respect to two major aircraft programs: the B-2 bomber and the Advanced Tactical Fighter. The Air Force says both are needed, are affordable, and will be built. That, at least, is the message Secretary Rice seeks to convey.

"The B-2 bomber still has to rank as the top priority in strategic modernization," he maintains. "As long as strategic offensive nuclear weapons exist, it's going to be imperative that we keep a strong deterrent against their use. We're not going to be able to pin our programs, in that regard, on any individual personality."

He says that USAF isn't backing off an inch from its plan to build the full force of 132 B-2 bombers at a total cost of \$70.2 billion. "I think 132 is a good number," asserts the Secretary. "If [the size of the force] were to be questioned, it would be something that doesn't need to be decided for quite a few years to come."

Whether the Air Force needs to build the B-2 at planned high rates, however, is becoming a controversial

out, partly for reasons of multiyear buys and partly to buy them out as quickly as possible, goes up to more than \$8 billion in a single fiscal year.

"One of the things we're examining now, but have not reached a final conclusion on, is whether we can lay the program out in a way that does not require letting the procurement funding get up to that high a peak at any single point in time."

In Secretary Rice's view, it may be

Air Force program officers now are engaged in analyzing the B-2 program to see whether such a slowdown would reduce, to an unacceptable degree, the economies of scale in the current plan.

"The issue we've got to look at, hard, is whether we can still produce efficiently enough," the Secretary says. "I'm not going to try to claim that there would not be any change. The issue is whether we can produce efficiently enough, if we get out before these programs have built up to full-rate production . . . and plan them for a different rate. That's what we're working on. . . . We would be interested in doing that only if it could be done efficiently."

Secretary Rice says there is no alternative to producing the Stealthy Advanced Tactical Fighter. The ATF is also expensive, costing upwards of \$60 billion for 750 USAF aircraft.

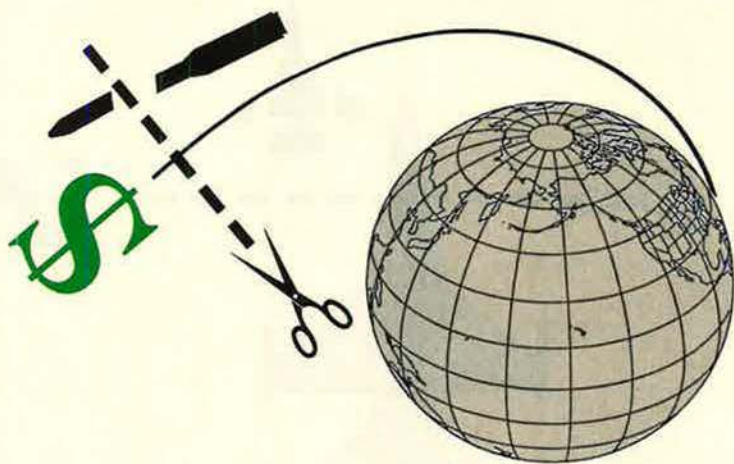
"The important thing to keep in mind there is the need," asserts the Air Force leader. "We have made advances in the F-15s and F-16s, but we're talking about an ATF that would only begin to come into service close to the turn of the century. The F-15s and F-16s, though they have been improved and updated, are based on technology that, by that time, will be twenty-five years old or so."

The Secretary, pointing out that US forces in modern times always have enjoyed control of the skies over the battlefield, remarked that "we don't want to contemplate" fighting under other conditions.

Secretary Rice said that the demonstration/validation schedule for the ATF recently slipped by six months as a result of two factors: The Air Force believes the program needs more time to develop technology on subsystems, particularly avionics; and the two contractor teams needed more time to design a variant of the ATF for the Navy to use aboard carriers. The airframes, he added, would have major differences.

Having done that, USAF is not prepared to accept further delays in the start of the ATF's full-scale development, now planned to start in mid-1991. "It would certainly be the Air Force view that we should continue to plan to commit to full-scale development at that time," says Secretary Rice.

"The ATF's time has got to come. You might argue a little about just exactly when, but it's time has got to come and it seems to me on pretty much the kind of schedule we're now looking at." ■



issue. Last December, Secretary Rice disclosed that USAF was considering a slowdown of production in response to tight military budgets.

Secretary Cheney, however, almost immediately overruled USAF's B-2 stretchout plan, choosing to finance production of all five B-2s originally proposed for Fiscal 1991. The Defense Secretary is said to have found the Air Force's plan incompletely analyzed at the time that he reviewed it. Secretary Cheney's decision does not affect B-2 production beyond 1991, however, and he may yet come to accept the Air Force proposal. Air Force officials say the idea is almost certain to be presented for consideration again for the FY 1992-97 Six-Year Defense Plan.

The Air Force proposal offers the benefit of producing far lower peak-year costs, which has been a major source of friction in Congress. In its official schedule, the Air Force proposes heavy spending on the bomber from 1992 through 1994: \$7.8 billion in 1992, \$8.4 billion in 1993, and \$7.7 billion in 1994.

"We're looking very hard at the question of whether it's really necessary to 'peak up' the procurement funding as much as the profile had been laid out," says Secretary Rice. "The B-2 program, as it's been laid

possible to achieve that goal by reshaping the B-2 production program, keeping plant construction and employment from reaching levels previously set for it.

"We're talking about huge sums of money in either case," explains Secretary Rice. "I would argue that, in principle, if you plan it out ahead of time, there is no good reason why . . . you can't produce as efficiently at 'N' billion as at 'N+1' billion. We're talking about a huge amount of resources. It's a matter of how you organize that production process and what you plan for and what you [create facilities] for. We don't have to let it build up necessarily to as high a rate as had been contemplated."

One big question is whether a production slowdown would increase the unit cost of the B-2, already pegged at about \$532 million. Secretary Rice thinks it might not. "The way we've gotten ourselves in trouble over and over again with procurement programs operating at inefficient rates," he contends, "is that we've allowed the activity to build up to a high level, and then cut it back from there. What we're trying to look at here—and we don't know the answer—is whether we can do better by not allowing the program to build up to as high a level of employment and infrastructure."

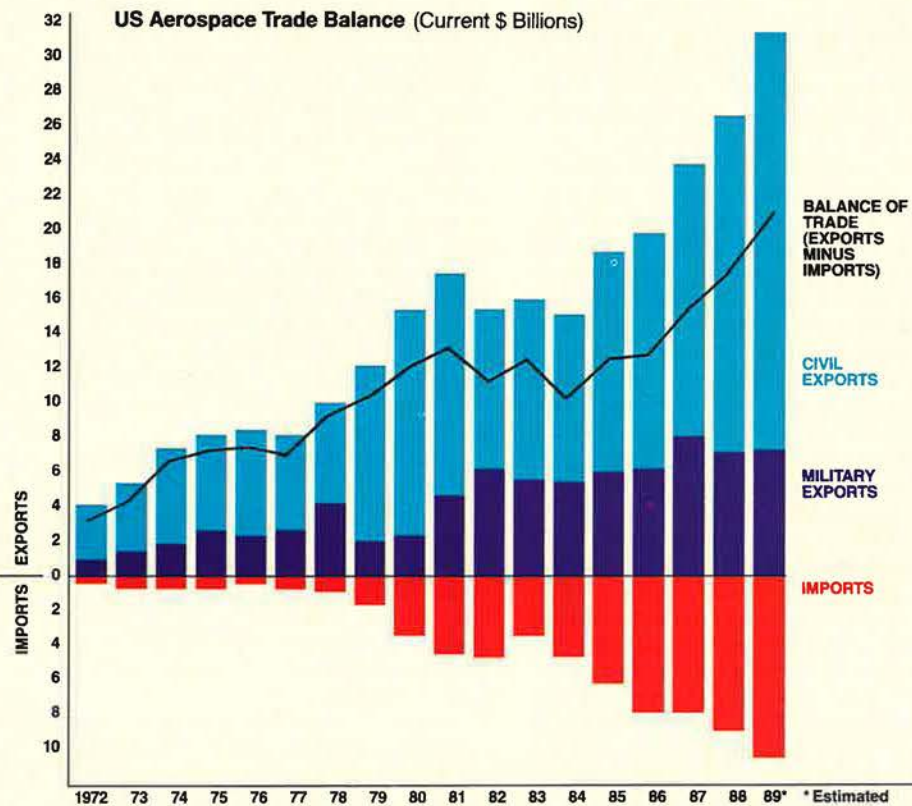
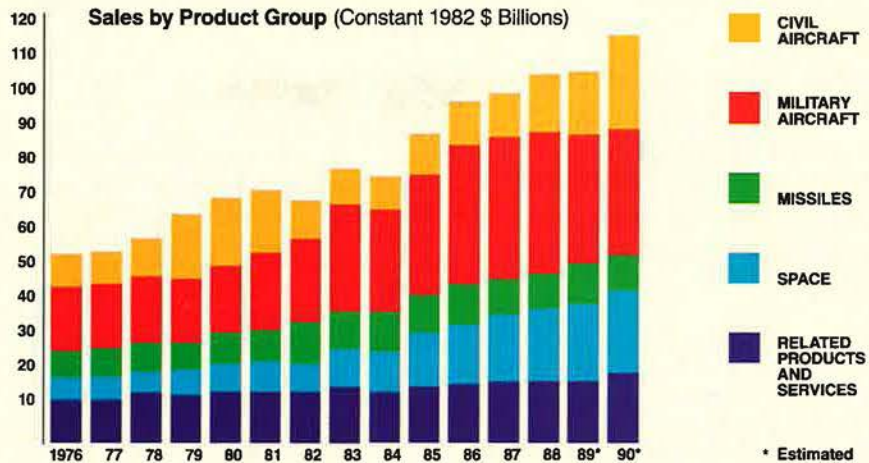
The Chart Page

By Colleen A. Nash, Associate Editor

Aerospace Up Despite Defense Slowdown

US aerospace sales were up in 1989 and are projected to rise further in 1990. The current boom in business for commercial transports is helping to compensate for loss of defense business. The US aerospace trade balance is also improving. Imports are up, but exports—especially of commercial jet aircraft—are increasing at an even more rapid rate.

Source: Aerospace Industries Association



By Brian Green, Congressional Editor

Trouble Awaits 1991 Budget

Congress warns that unless the Pentagon develops a more coherent strategy based on updated threat assessments, the defense program is in for rough handling this term.

Even before the Fiscal Year 1991 defense budget was presented to Congress, there were clear indications that the package would not have smooth sailing. A coherent military strategy that reflects changing military and political conditions will be essential to rational defense cuts, according to key congressional leaders.

Sen. Sam Nunn (D-Ga.), the Chairman of the Senate Armed Services Committee, complained at a recent hearing that the FY 1990 budget failed to reflect 1988 intelligence assessments that indicated NATO would have earlier warning of Soviet attack than had been predicted—and that Congress had not been notified of these assessments. The classified estimates, which were only formally accepted by the US intelligence community in September 1989, indicated that warning time of a Soviet attack would be "substantially longer"—thirty-three to forty-four days, rather than the ten days now postulated by NATO strategy, according to published reports. Under Secretary of Defense for Policy Paul Wolfowitz asserts that the longer warning time is a direct result of NATO's improved capability, readiness, and intelligence, which would force more Soviet preparation before an invasion.

Mr. Wolfowitz indicated that the FY 1991 budget would not reflect the new longer warning times now accepted. He noted that the magnitude and speed of the changes in eastern Europe and the Soviet Union, the lack of finalized conventional arms-control agreements in Europe, and a desire to avoid "undercutting the very strategy that has brought us to the brink of success" point to a cautious approach. "[I]n my view, the most dangerous situation would be one in which the Soviet Union believed it could gain a de-

cisive military advantage in a crisis by moving quickly, and that this advantage would disappear later in the crisis. . . . We are trying to avoid [this] by not reducing NATO's capabilities too soon," according to Mr. Wolfowitz.

Senator Nunn argued that "warning time drives strategy [and] strategy drives budgets" and that defending the FY 1991 budget would be "almost impossible" if the budget were not based on an "up-to-date net assessment, an up-to-date strategy . . . [and] current developments in the world."

Sen. John Warner (R-Va.) said that roles and missions needed to be re-examined and that the allocation of resources among services should reflect this reexamination. He suggested that "future strategy [be] predicated on . . . greater mobility."

Chairman of the House Armed Services Committee Rep. Les Aspin (D-Wis.), in a separate forum, argued that "without a sound basis for the reductions, the budget is in free-fall." He was extremely critical of the DoD "exercise" to find \$180 billion in budget savings from FY 1992 to FY 1994 without having a comprehensive strategy. He warned that a budget without an underpinning of military strategy "will be patched together with a pork strategy." He argued that Secretary of Defense Dick Cheney did not have time to develop a coherent strategy for the FY 1990 budget. President Bush approved a top line of \$292 billion in defense budget outlays for FY 1991 in the second week of December.

Other key points in Mr. Wolfowitz's testimony:

- Soviet defense spending will decline for the first time in 1989, according to intelligence estimates. Soviet defense spending rose three percent a year for the first four years of Soviet leader Gorbachev's tenure, while US defense spending fell eleven percent over the same period.

- While NATO has improved its capability compared to that of the Warsaw Pact prior to a conflict, after an extended mobilization Soviet forces are projected to compare more favorably to NATO forces than they would have a decade ago.

Programs at Risk

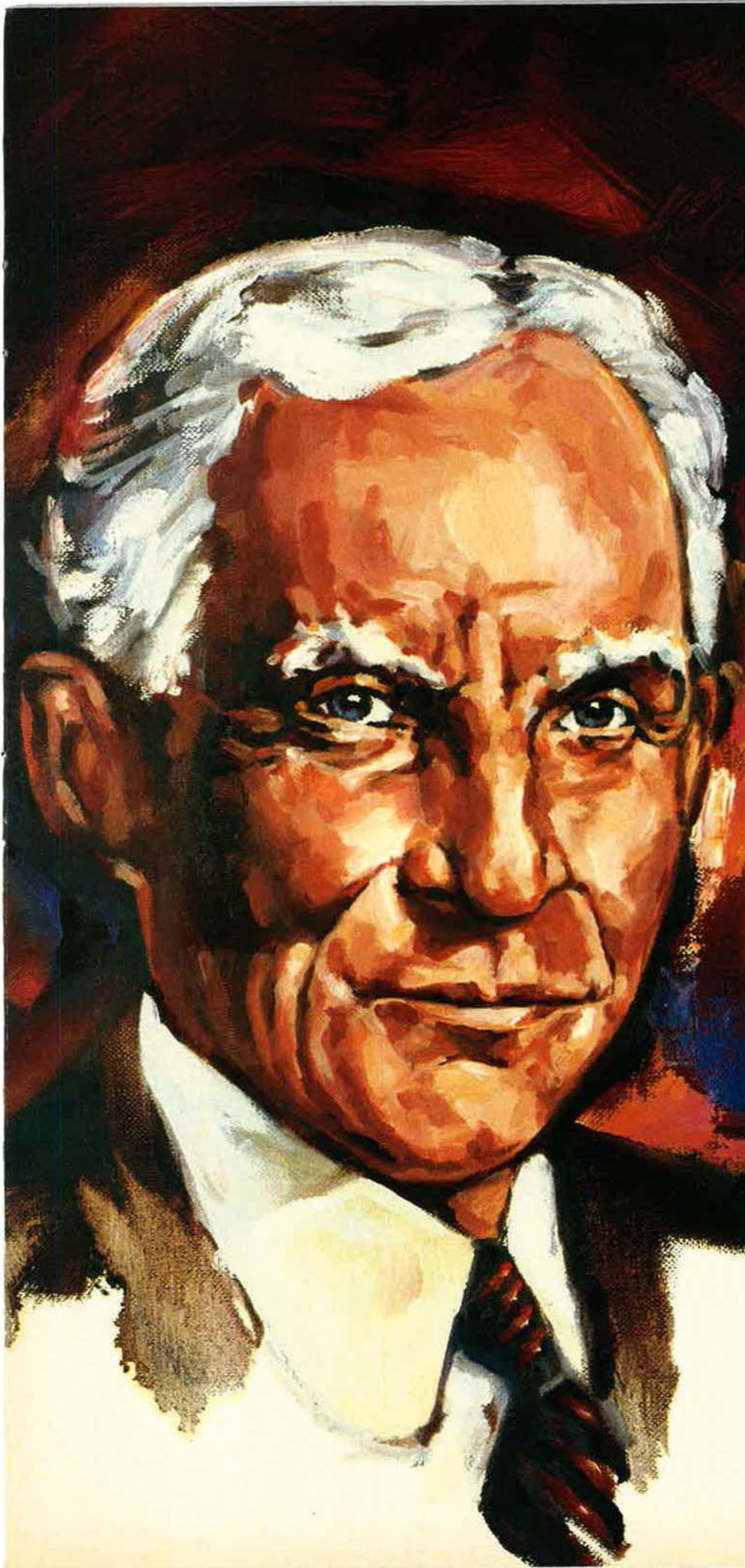
Changing political and military conditions indicate that requirements for programs will be more of a congressional focus than they have been in the past. A DoD team chaired by Under Secretary of Defense for Acquisition John Betti has spent time examining the requirements for major aircraft systems, including the B-2 Stealth bomber, the Advanced Tactical Fighter, the Advanced Tactical Aircraft, and the C-17 airlifter.

The C-17 is considered by some to be the program most at risk, in part because of the intelligence assessment that NATO will have a longer warning time of Soviet attack. The perception on Capitol Hill that the program suffers from cost and technical problems also hurts the C-17. The proposal by Senator Warner, a former Secretary of the Navy, for a mobility-based strategy may not help the C-17, since airlift could be replaced by fast sealift in some scenarios.

Even the F-16?

The F-16 is more controversial than ever in the debate surrounding the close air support/battlefield air interdiction (CAS/BAI) mission. The FY 1990 authorization bill would have prohibited obligation of FY 1990 money for the F-16 until the Air Force "takes close air support seriously" by requiring expansion of Air Force and Army CAS/BAI test plans and integration of CAS aircraft with the instrumentation at the National Training Center at Fort Irwin, Calif. The measure could have resulted in a shutdown of the F-16 production line. It was revised late last session to give the Air Force until April 1, 1990, to accomplish all the tasks. The Air Force estimates that completion could take up to three years.

The authorization conferees remain persuaded that the Air Force attaches "a low priority [to] this important mission." That impression may be reinforced if the Air Force, convinced that a decision on a CAS/BAI aircraft is several years away, backs off on its strong support for the A-16 as its preferred CAS/BAI alternative. ■



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in which
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impossible.”**

Henry Ford
American Industrialist
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GE Aircraft Engines
Keeping the Promise

By Jeffrey P. Rhodes, Aeronautics Editor

Washington, D. C.

★ "The high cost of continued operation of an asset so ill-used by the Department [of Defense] cannot be justified. Consequently, the conferees reluctantly recommend termination of any further operation of the SR-71s." So wrote the House and Senate military authorization conferees in the *Congressional Record* in early November. Strategic Air Command halted operations with the high-altitude, high-speed reconnaissance aircraft shortly after passage of the compromise authorization bill.

The Air Force had been trying to kill the SR-71 program for the past two years. Former Secretary of the Air Force Edward C. Aldridge said in testimony before Congress in 1988 that SR-71 operations cost approximately \$350 million a year, or the equivalent cost of two tactical fighter wings. That cost figure was thought to include the actual cost of operating the remaining SR-71s, plus thirty dedicated KC-135Q tankers and T-38s necessary for SR-71 pilot proficiency.

The House Appropriations Committee had proposed a \$200 million increase to the Air National Guard budget to allow the Guard to take over SR-71 operations because of strong congressional and intelligence community support for the airplanes. The defense appropriations conference report had funded the SR-71s at \$210 million, but the defense authorization conference had zeroed the program out. Rep. Anthony C. Beilenson (D-Calif.) objected to an appropriation made without authorizing legislation, and this effectively killed the program.

The SR-71s were grounded just under two months before the type would have celebrated the twenty-fifth anniversary of its first flight. Famed Lockheed designer Clarence L. "Kelly" Johnson and his Advanced Development Projects section (the "Skunk Works") designed and built the aircraft in total secrecy as a follow-on to the U-2. A predecessor to the SR-71, the A-12, first flew in April 1962. The first SR-71A flew on December 22, 1964, with Lockheed pilot Bob Gilliland at the controls.

Two months short of the twenty-fifth anniversary of the SR-71's first flight, the Air Force halted operations with the triple-sonic, high-altitude, strategic reconnaissance aircraft. While many of the details about missions flown by Blackbird crews will never be known, the aircraft set an impressive collection of records, including three absolute aviation records. The last major public appearance of the SR-71 occurred at the Paris Air Show last June.

The SR-71, which never had an official nickname but was popularly known as the Blackbird, is still a technological marvel, designed to fly at altitudes above 80,000 feet and speeds greater than Mach 3. SR-71 crews still hold three absolute aviation records: altitude in horizontal flight (85,068.997 feet), speed over a straight course (2,193.16 mph), and speed over a closed course (2,092.294 mph). All of those records were set in 1976, ten years after the plane entered operational service. Among other notable flights, an SR-71 crew set the New York-to-London speed record of 1,806.964 mph in 1974. Elapsed time on that flight was one hour, fifty-four minutes, and 56.4 seconds.

At least thirty-two SR-71s were known to have been built before production was terminated in 1968. Twenty-nine are operational reconnaissance aircraft (SR-71A), while two were modified with a raised rear cockpit (SR-71B) and served as op-

erational trainers. A third A model, designated SR-71C, was modified into a trainer to replace a B model that crashed. All of the Blackbirds were operated by the 9th Strategic Reconnaissance Wing at Beale AFB, Calif. The wing also had detachments at RAF Mildenhall, England, and Kadena AB, Japan.

SAC says that disposition of the remaining aircraft (believed to number approximately twelve) was scheduled to be resolved by the end of January. A number of museums have requested examples of the aircraft for static display. After the KC-135Qs are purged of JP-7, a low-vapor-pressure hydrocarbon fuel with a flash point so high a lit match thrown into it will not start a blaze, they will be distributed to other SAC refueling wings.

★ The no-growth defense budgets of the last few years are beginning to catch up with the aerospace industry. Profits from military contracts are off,



—Lockheed photo by Eric Schulzinger

military sales and orders have topped out, and hard times are in store.

This appraisal was provided by Don Fuqua, President of the Aerospace Industries Association of America, at the annual aerospace review-and-forecast luncheon sponsored by AIA and the Aviation/Space Writers Association near the end of last year in Washington.

Mr. Fuqua declared, "I do not minimize the impact on our industry of the defense spending cuts we know are coming. We are braced for heavy weather, particularly among companies most deeply committed to defense work.

"The industry can expect lower levels of defense sales through the first half of the decade, particularly in the military aircraft category. This decline in defense activity is already apparent in a substantially reduced flow of new orders for defense systems."

Things could be worse, Mr. Fuqua said. He predicted that the industry's commercial aircraft business will continue to boom and that its market for space products and services should remain strong in the commercial and military sectors.

"We expect significantly lower levels of defense sales in the 1990s than we experienced in the 1980s," he said, "but we're declining from an all-time peak, and we believe we will be able to maintain a moderately healthy level of defense activity."

★ The most visible part of the STS-33 space shuttle mission was its liftoff, as the shuttle *Discovery* left a brilliant exhaust trail that could be seen from hundreds of miles away as the shuttle streaked into the night sky on November 22. After that, there wasn't much said about the mission, because it was a dedicated Department of Defense flight.

The liftoff from Launch Complex 39B at 7:23 p.m. marked only the third time a shuttle had taken off at night, and it was only the fourth nighttime manned launch in the space program's history. *Discovery* reached orbit nine minutes after launch, and the crew was given permission to begin on-orbit operations two and a half hours later.

The primary payload was believed to be a signals intelligence satellite that can intercept military and diplomatic radio transmissions and monitor missile tests and troop movements. The 2.5-ton satellite (thought to be named *Aquacade*) was released approximately ten hours after liftoff and started toward a geosynchronous orbit. After the satellite was on its way, the crew "sat down" to a



The 1989 Strategic Air Command bombing and navigation competition marked the first time a unit flying the Rockwell B-1B bomber won the Fairchild Trophy, given to the bomber/tanker unit with the highest competition effectiveness. Here, crews from the 28th Bombardment Wing at Ellsworth AFB, S. D., hoist the Trophy at the awards ceremony as SAC Commander in Chief Gen. John T. Chain, Jr. (center), looks on.

freeze-dried Thanksgiving dinner. Other payloads were thought to include Strategic Defense Initiative experiments.

The fifth dedicated DoD mission was supposed to end with a night landing at Edwards AFB, Calif., on November 26, but wind gusts of more than thirty mph caused the landing to be delayed. *Discovery* touched down on the concrete strip at Edwards (Runway 04) at 4:31 p.m. PST on November 27 after having to make one more orbit, again because of winds. The thirty-second shuttle mission lasted five days, six minutes, and forty-six seconds. Damage to *Discovery* was minor, although the crew did have to fix an inoperative toilet in orbit.

The crew consisted of Air Force Col. Frederick C. Gregory, the first black astronaut to command a shuttle mission, pilot Air Force Col. John E. Blaha, who replaced the late Rear Adm. S. David Griggs, and mission specialists Dr. F. Story Musgrave, Dr. Kathryn C. Thornton, and Navy Capt. Manley "Sonny" Carter. Drs. Musgrave and Thornton are medical doctors. Dr. Thornton and Captain Carter were space rookies.

★ Aircrews from the 28th Bombardment Wing at Ellsworth AFB, S. D., edged out crews from the 380th BMW at Plattsburgh AFB, N. Y., to take the top award in the recent Strategic Air Command bombing and navigation competition. This marked the first time a unit flying the Rockwell B-1B bomber has won the Fairchild Trophy, which is given to the bomber/tanker team with the highest competition ef-

fectiveness. Another B-1 unit, the 319th BMW at Grand Forks, N. D., finished third in the Fairchild standings. This was only the second year that B-1 crews have participated in the "Proud Shield" competition.

The 28th BMW also won the Gen. Ira C. Eaker Trophy, given to the B-1B unit compiling the most points, and the William J. Crumm Linebacker Memorial Trophy, given to the bomber unit earning the most points in all activities except electronic countermeasures and simulated Short-Range Attack Missile firing.

Other trophies and winners: **Doolittle Trophy** (numbered Air Force whose units receive the highest percentage of total points)—15th Air Force; **Mitchell Trophy** (best scores in conventional bombing, tactics, electronic combat, and fighter intercept exercises) and **Ryan EWO Bombing Trophy** (B-52 unit with most points except for SRAM results)—93d BMW, Castle AFB, Calif.; **Saunders Trophy** (tanker unit with most points)—384th BMW, McConnell AFB, Kan.; **Ellis KC-10 Trophy** (best KC-10 unit)—22d Air Refueling Wing, March AFB, Calif.

Meyer Memorial Trophy (best F/FB-111 low-level mission scores) and **Mathis Trophy** (best STRC bombing and time control)—380th BMW; **Dougherty SRAM Trophy** (best SRAM results) and **Davis Most Improved Unit Trophy** (highest percentage of increase)—319th BMW; **Holloway Trophy** (best celestial navigation in tankers)—301st AREFW, Malmstrom AFB, Mont.; **Bartsch Electronic Warfare Trophy** (best B-52 ECM point total)—416th BMW, Griffiss AFB, N. Y.;

—USAF photo by SSGT. Ronnie W. Nelson

LeMay Bombing Trophy (best low-level bombing and time control)—509th BMW, Pease AFB, N. H.; and a new trophy, the **Maynard "Snuffy" Smith B-52 Gunnery Trophy** (B-52 unit with most points in gunnery and fighter activity)—379th BMW, Wurtsmith AFB, Mich.

In a completely different competition, US Army helicopter pilots dominated the World Helicopter Championships last fall by taking the first seven individual places. The team won its third consecutive team championship by garnering 2,373 of a possible 2,400 points. France, England, West Germany, and the Soviet Union also took part. CWO-3 Jon Iseminger, flying with CWO-3 Rudolph Hobbs, took the top individual honors. The US team flew Bell OH-58C Kiowa scout helicopters in the biennial championships, held in Chantilly, France.

★ Another of this column's periodic roundups of missile happenings:

The **Peacekeeper** rail-garrison concept moved a step closer to reality on November 29, when the Air Force released a list of seven bases where the fifty LGM-118A intercontinental ballistic missiles will be deployed. The bases are Barksdale AFB, La.; Grand Forks AFB, N. D.; Fairchild AFB, Wash.; Dyess AFB, Tex.; Little Rock AFB, Ark.; Wurtsmith AFB, Mich.; and the main operating location, F. E. Warren AFB, Wyo., where the missiles are currently housed in modified Minuteman III silos.

Each of the twenty-five trains (carrying two missiles apiece) will be manned and on alert in hardened shelters at each base. When directed by the National Command Authorities, the trains will be dispersed onto the nation's commercial rail system, which will enhance survivability of the missiles. The trains will have access to more than 120,000 miles of track from the operating locations. The first train will be turned over to Strategic Air Command in 1992, and the remaining trains are scheduled to be turned over by 1994.

The Air Force recently carried out the eighth and ninth tests of the Northrop AGM-136A **Tacit Rainbow** loitering antiradiation missile. During the successful test on November 3, the missile was launched at low altitude, made its run to the target (which included climbing to altitude), made a diving attack, and hit in the target area. During the December 1 test, the missile was launched from a higher altitude, made its run to the

target area, loitered, and then made a diving attack. This test was ruled a partial success as the result of an anomaly that developed during the terminal phase of the flight. Both tests took place at the Naval Weapons Center Test Range near China Lake, Calif., and used a B-52 as the carrier aircraft. The launches were the latest in a series of twenty-five planned combined Development, Test, and Evaluation/Initial Operational Test and Evaluation (DT&E/IOT&E) flights.

The Air Force also successfully carried out the sixth IOT&E flight of the Rockwell **AGM-130** rocket-propelled glide bomb on November 17. During this first IOT&E launch from an F-111 (which was also conducted at the Naval Weapons Center), the weapon was released at 200 feet above ground level, climbed to 1,000 feet, and fired its rocket motor. After the rocket completed its burn, it was jettisoned. The weapon was then guided to a direct hit in a tunnel entrance. Total flight time was two minutes, and the target was 14.1 miles from the release point. Three more IOT&E launches from an F-111 are planned.

Hughes delivered to the US Army on November 30 the 500,000th BGM-71 **TOW** (Tube-launched, Op-

tically tracked, Wire-guided) antitank round built. The milestone missile, a TOW-2A, will likely be sent to a unit in Europe. The first example was delivered in 1969, initial operational capability was reached in 1970, and the missile was used by the US in Vietnam and by Israel in the 1973 Yom Kippur War. The TOW-2 has a thirteen-pound shaped-charge warhead.

The Navy successfully carried out the fourth test of the McDonnell Douglas AGM-84E Standoff Land-Attack Missile (**SLAM**) at the White Sands (N. M.) Missile Range on November 13. The missile, a derivative of the Harpoon antiship missile, was launched by an A-6 crew and guided to the target by an aviator in an A-7. After the missile flew nearly fifty miles, the A-7 pilot picked out the primary target and locked on, and the missile guided itself to a direct hit.

The Navy also successfully carried out the fourth and fifth undersea tests of the Lockheed UGM-133A **Trident II**, or D5, sea-launched ballistic missile recently. Prior to the test on December 4, the Navy moved protesters from the environmental group Greenpeace out of the area off the coast of Cape Canaveral AFS, Fla., where the launch was to take place. The shot was then

Dressed in his "clean suit," Mike Garoutte, a production supervisor with General Dynamics Space Systems Division in San Diego, Calif., goes over a checklist while inside an Atlas launch vehicle propellant tank before it is sealed. The company is building four versions of the booster for civilian and military users. The primary payload for the military Atlas II boosters will be the Defense Satellite Communications System spacecraft.



carried out from the USS *Tennessee* (SSBN-734). Details about the flight were not released. The December 15 test was carried out without any interference. Observers said the inert warheads landed near Ascension Island, 4,000 nautical miles away from the launch area, approximately thirty-five minutes after launch. These tests indicate that the problem that led to failures in two of the first three undersea tests has been fixed by placing a mesh cover over the missile's first-stage exhaust nozzle. The cover prevents a plume of seawater from following the missile as it breaks the surface, and the mesh is blown off when the missile ignites.

★ **PURCHASES—Martin Marietta** was awarded a \$1.6 billion contract from Air Force Systems Command's Space Systems Division on November 30 to build and launch eighteen more Titan IV heavy-lift space boosters. The contract includes an option for eight additional Titan IVs through 1995. If the option is exercised, the Air Force's total buy would be forty-nine of the boosters, which can launch 39,000-pound payloads to low-Earth orbit or 10,000-pound payloads to geosynchronous orbit from Cape Canaveral AFS, Fla.

FlightSafety International received an Air Force contract worth approximately \$1.1 million on December 5 for simulator-based C-29A pilot training. The British Aerospace/Sierra Research C-29, a military version of the BAe 125-800 corporate jet, will be used for flight inspection of navigation aids and airways certification. The three-year contract calls for initial and recurrent training each year at the company's facility in Houston, Tex.

★ **DELIVERIES—Pratt & Whitney delivered the first production F100-PW-229 fighter engine** to the Air Force on December 6. The delivery of the 29,000-pound-thrust Increased Performance Engine was more than a month ahead of schedule. The engine will be used in both F-15s and F-16s. Delivery of the first F110-GE-129, General Electric's IPE, was expected in late December. This engine will first be used in F-16s.

Boeing Helicopters rolled out the prototype MH-47E Army special operations helicopter in ceremonies at its Ridley Township, Pa., facility on December 6. The new helicopter features oversized, all-composite fuel pods, an air-to-air refueling system, internal auxiliary fuel tanks, eleven more troop seats than the CH-47D, an internal cargo handling system, an on-board oxygen generating system, a rescue hoist and Fastrope rappell-

ing system, and twin .50-caliber machine guns. The MH-47E also has dual mission processors, dual color and dual monochrome multifunction displays, an inertial navigation system and a Global Positioning System receiver, a terrain-following/terrain-avoidance radar, a forward-looking infrared system, and a real-time moving map display. First flight is expected to come in March, with delivery in November. The Army has a requirement for fifty production MH-47Es, and Boeing is under long-lead contract for the first sixteen aircraft. Those deliveries are expected to start in 1992.

McDonnell Douglas delivered the first production F/A-18C/D Hornets equipped with a night-attack capability to the Navy in November. The first F/A-18C was delivered to the Naval Air Test Center at NAS Patuxent River, Md., on November 1, and the first two-seat F/A-18D followed on November 14. The key to the night-attack

capability is the Hughes Thermal Imaging Navigation Set (TINS). The TINS produces a TV-like image of the area ahead of the aircraft and presents it in the pilot's head-up display. The new Hornets will also have night vision goggle-compatible cockpit lighting and a digital color moving map. The Marine Corps will replace its A-6 fleet with the new F/A-18Ds that feature a rear cockpit modified much like the weapon systems officer station in the F-15E. The Navy will continue to use its D models as operational trainers.

The **F-111 modified for the Mission Adaptive Wing program was retired** to the Air Force Flight Test Center Museum at Edwards AFB, Calif., in December. The MAW featured built-in computerized controls that could change the pliable wing's shape in flight. During 143 hours of testing on fifty-nine flights, the MAW aircraft (compared to a fixed-wing aircraft)

February Anniversaries

- **February 5, 1905:** T. S. Baldwin takes part in a ten-mile race between his dirigible and an automobile. The dirigible and its pilot win by a three-minute margin.
- **February 27, 1920:** Maj. R. W. "Shorty" Schroeder sets a world altitude record of 33,114 feet in the Packard-LePere LUSAC-11 biplane over McCook Field in Dayton, Ohio.
- **February 2, 1925:** President Calvin Coolidge signs the Kelly Act, which authorizes the air transport of mail under contract. This is the first major legislative step toward the creation of a US airline industry.
- **February 12, 1935:** The Navy airship USS *Macon* (ZRS-5) crashes off the California coast with two fatalities out of a crew of eighty-three. This loss effectively ends the Navy's rigid airship program.
- **February 21, 1940:** Henry A. H. Boot and John T. Randall, working at the University of Birmingham (England), create the first practical magnetron. The magnetron, a resonant-cavity microwave generator, is a vital element in the development of airborne radar.
- **February 19, 1945:** The Marine V Amphibious Corps, with air and sea support, lands on Iwo Jima. The capture of this small spit of volcanic rock has important considerations for the Army Air Forces, as the island's three airfields will be used as emergency landing fields for Marianas-based B-29s and as a base for fighter operations. By March 26 the island is secured, at a cost of more than 19,000 Japanese and 6,520 American lives.
- **February 20, 1945:** Secretary of War Henry Stimson approves plans to establish a rocket proving ground near White Sands, N. M.
- **February 6, 1950:** The Department of Defense announces that the Mighty Mouse 2.75-in. folding fin aerial rocket has been successfully test fired. Development of Mighty Mouse began in earnest in 1948.
- **February 23, 1955:** The Army picks Bell Helicopter from a list of twenty competing companies to build its first turbine-powered helicopter. The winning design (designated XH-40) would become the HU-1 (and later still, UH-1) Iroquois, the renowned "Huey," which gained fame in Vietnam with the Army, Navy, Air Force, and Marine Corps and is still in use today.
- **February 26, 1955:** North American test pilot George Smith becomes the first person to survive ejection from an aircraft flying at supersonic speed. His F-100 Super Sabre was traveling at Mach 1.05 when the controls jammed and he was forced to punch out.
- **February 1, 1965:** The first Boeing LGM-30F Minuteman II intercontinental ballistic missile unit, the 447th Strategic Missile Squadron at Grand Forks AFB, N. D., is activated. The next day, the Air Force reveals that the new missile can be launched via radio signal from an airborne command post.
- **February 1, 1975:** Maj. Roger Smith sets a world time-to-climb record to 30,000 meters (98,425 feet) in 3:27.8 minutes in the McDonnell Douglas F-15A Streak Eagle. This is the last of eight time-to-climb records set by three USAF pilots in just over two weeks at Grand Forks AFB, N. D. Two of the marks still stand.

demonstrated a twenty-five percent increase in range, a sustained G-loading increase of twenty-six percent, a peak G-loading increase of eighteen percent, and an increase of seventy-one percent in its ability to pull up and clear an obstacle. Ten pilots flew the aircraft between October 1985 and December 1988, when testing was concluded.

The Soviet Union began deliveries of its MiG-29 "Fulcrum" fighter to Cuba, Afghanistan, and Czechoslovakia late last year. Cuba is expected

to receive twelve single-seat Fulcrum-As and a pair of tandem-seat MiG-29UB trainers. The F/A-18-sized MiG-29s, while officially intended for air defense, have a combat range of 650 miles, which could put areas of the US at risk.

★ **MILESTONES—Air Force Academy quarterback Dee Dowis wound up sixth in the balloting for the Heisman Trophy, the top individual honor given in college football. This marked the highest finish ever for a**

Falcon player. The previous high mark for an Air Force Academy player was eighth by flanker Ernie Jennings in 1970. Cadet Dowis, a five-foot-ten, 153-pound senior from Royston, Ga., finished with fifteen first-place votes on his way to 145 points in the nationwide balloting for the Heisman, presented annually by the Downtown Athletic Club in New York City. The Falcons' 1989 record was 8-4-1.

The penguins were impressed, too. **Two 60th Military Airlift Wing crews recently landed their Lockheed C-5Bs in Antarctica, which marked the first time an aircraft that large had touched down on the ice continent.** The C-5 crews, along with a C-141 crew, were participating in the annual resupply of the National Science Foundation's Antarctic research station. The first C-5 landed October 4 and carried seventy-two passengers and 168,000 pounds of cargo, including two fully assembled Bell UH-1N helicopters. The second C-5 landed two days later and carried seventy-three passengers and 157,000 pounds of cargo, which included two more UH-1Ns. The planes flew from Travis AFB, Calif., to Christchurch, New Zealand, before flying to McMurdo Station. The C-5s landed without skis on a seventy-six-inch-thick ice runway.

A B-1B crew from the 96th Bombardment Wing at Dyess AFB, Tex., flew the type's first low-level night sortie using fully automatic terrain-following equipment on November 8. This was a key step in the bomber's maturation process. The first flight was made over relatively flat terrain, while a second flight on November 14 was made over terrain that varied greatly in altitude. Previous low-level flights had been made during the day in good weather.

The first LTV YA-7F made its first flight on November 29 with company test pilot Jim Read at the controls. During the one-hour, ten-minute flight from the company's facility in Dallas, Tex., the plane was put through a number of initial systems, engine, and overall stability checks at an altitude of 15,000 feet. Three more flights of the highly modified A-7D will be made around Dallas before the plane is ferried to Edwards AFB, Calif., to begin a ten-month test program. A second YA-7F is expected to make its first flight in a few weeks. The YA-7F is powered by a Pratt & Whitney F100-PW-220 engine.

The Navy's newest aircraft carrier, the **USS Abraham Lincoln (CVN-72), was commissioned** in ceremonies at

Senior Staff Changes

RETIREMENTS: M/G William E. Overacker; M/G Cecil W. Powell.

PROMOTIONS: To be **General:** Ronald W. Yates.

To be **Lieutenant General:** Thomas R. Ferguson, Jr.

To be **Major General:** Edgar R. Anderson, Jr.; Donald J. Butz; Robert E. Dempsey; Albert J. Edmonds; John S. Fairfield; John C. Fryer, Jr.; Eugene E. Habiger; William P. Hallin.

Donald G. Hard; Ronald W. Iverson; James L. Jamerson; Jay W. Kelley; Walter Kross; James J. LeCleir; Charles D. Link; Robert M. Marquette, Jr.; James C. McCombs.

Stephen M. McElroy; James W. Meier; Philip L. Metzler, Jr.; Kenneth V. Meyer; Carl G. O'Berry; Richard J. O'Leary; Raymond E. O'Mara; Robert W. Parker.

Michael D. Pavich; David J. Pederson; Joseph W. Ralston; Ralph R. Rohatsch, Jr.; Michael E. Ryan; Ronald C. Spivey; Walter T. Worthington.

To be **ANG Major General:** Don E. Follis; Frederick R. Keith, Jr.

To be **ANG Brigadier General:** Gary C. Blair; William P. Bland, Jr.; Hartwell F. Coke IV; Arthur B. Cornelius; Joseph C. Daly; Joseph A. Greenlee, Jr.; Dennis B. Hague; John H. Hebl.

Allen J. Henderson; Orville K. Hollenbeck; Larry D. Lessly; Timothy J. Lowenberg; Robert V. Paschon; Allen C. Pate; James L. Pierce; Lyle M. Rich; Ralph D. Townsend.

CHANGES: L/G Robert D. Beckel, from Dep. Chairman, NATO Military Committee, Brussels, Belgium, to Cmdr., 15th AF, and Dir., 15th AF Combat Ops. Staff, SAC, March AFB, Calif., replacing L/G Richard A. Burpee. . . B/G Hiram H. Burr, Jr., from Dep. Cmdr., Joint Task Force Middle East, USCENTCOM, to Dep. Dir., Ops., NMCC Team #1, J-3, Joint Staff, Washington, D. C., replacing B/G Thomas R. Griffith. . . M/G (L/G selectee) Thomas R. Ferguson, Jr., from DCS/Tech. and Req. Planning, Hq. AFSC, Andrews AFB, Md., to Principal Dep. Ass't Sec'y of the Air Force for Acq., OSAF, Washington, D. C., replacing L/G Ronald W. Yates. . . B/G Thomas R. Griffith, from Dep. Dir., Ops., NMCC Team #1, J-3, Joint Staff, Washington, D. C., to Cmdr., 836th AD, TAC, Davis-Monthan AFB, Ariz., replacing B/G (M/G selectee) Walter T. Worthington. . . B/G Larry L. Henry, from Cmdr., 831st AD, TAC, George AFB, Calif., to IG, Hq. TAC, Langley AFB, Va., replacing B/G Richard B. Myers.

B/G Richard B. Myers, from IG, Hq. TAC, Langley AFB, Va., to DCS/Plans; Dep. Dir., Plans, TACOS; and DCS/Plans, USAFLANT, Hq. TAC, Langley AFB, Va., replacing B/G (M/G selectee) Michael E. Ryan. . . B/G Harold H. Rhoden, from IG and Cmdr., USAF ISC, Hq. USAF, Ramstein AB, Germany, to Dep. Cmdr., Joint Task Force Middle East, USCENTCOM, replacing B/G Hiram H. Burr, Jr. . . B/G (M/G selectee) Michael E. Ryan, from DCS/Plans; Dep. Dir., Plans, TACOS; and DCS/Plans, USAFLANT, Hq. TAC, Langley AFB, Va., to DCS/Ops., and Dep. Dir., Ops., TACOS, Hq. TAC, Langley AFB, Va., replacing M/G (L/G selectee) Joseph W. Ashy. . . B/G (M/G selectee) Walter T. Worthington, from Cmdr., 836th AD, TAC, Davis-Monthan AFB, Ariz., to Vice Cmdr., 12th AF, TAC, and Vice Cmdr., US Southern Air Forces, Bergstrom AFB, Tex., replacing M/G William A. Struder. . . L/G (Gen. selectee) Ronald W. Yates, from Principal Dep. Ass't Sec'y of the Air Force for Acq., OSAF, Washington, D. C., to Cmdr., Hq. AFSC, Andrews AFB, Md., replacing retiring Gen. Bernard P. Randolph.

SENIOR EXECUTIVE SERVICE (SES) CHANGES: Elizabeth J. Keefer, to Dep. Under Sec'y (Int'l Affairs), Hq. USAF, Washington, D. C. . . Oral L. Smithers, to Dir., Flight Systems Engineering, ASD, AFSC, Wright-Patterson AFB, Ohio. . . Cathlynn B. Sparks, to Dep. Dir., Budget Ops., SAF/FMBO, Washington, D. C., replacing John E. Lang. . . Gerald L. Yanker, to Ass't DCS/Maintenance, Hq. AFLC, Wright-Patterson AFB, Ohio, replacing William E. Daley. ■

the Norfolk, Va., Naval Station on November 11. The *Abraham Lincoln* has a length of 1,040 feet, a beam of 134 feet, and a displacement of 96,000 tons fully loaded. Its 252-foot-wide flight deck will support ninety aircraft. The ship, the fifth *Nimitz*-class carrier, is powered by two nuclear reactors. The ship's eventual home port will be San Francisco, Calif.

Speaking of flattops, the **Soviet Union has started air operations on its first true carrier, the *Tbilisi***. In tests conducted in mid-November in the Black Sea, a Su-27 "Flanker," a MiG-31 "Foxhound," and a Su-25UB "Frogfoot" ground-attack airplane were landed on the 65,000-ton ship. The ship features a 300-meter ski jump ramp on its bow instead of conventional catapults. The *Tbilisi* is expected to carry approximately sixty aircraft.

★ **NEWS NOTES**—The **Air Force recorded its third safest flying year in history during FY 1989**, with a Class A mishap rate of 1.59 accidents per 100,000 flying hours. Seventy-six people died in fifty-five Class A mishaps last year, and the cost in lost man-hours and equipment totaled nearly \$1 billion, which was the highest ever. The F-16 had the highest accident rate, with fourteen fighters damaged or destroyed. Eighteen aircraft types recorded a year without mishaps. Air Force Systems Command and Air Force Logistics Command were the only commands to have a Class A rate of zero. A Class A mishap is one in which the aircraft is destroyed, there is a fatality, or there are more than \$500,000 in damages. The lowest Class A rate in history was 1.53 per 100,000 flying hours, in FY 1986.

The **fifth Rockwell Navstar Global Positioning System satellite was successfully launched** aboard a McDonnell Douglas Delta II rocket on December 11. The Block II satellite reached orbit approximately twenty-five minutes after liftoff from Launch Complex 17 at Cape Canaveral AFS, Fla., at 1:10 p.m. When completed in 1992, the GPS constellation will consist of twenty-one operational satellites and three on-orbit spares. In a related note, one of the early development Block I GPS satellites recently completed its fourth year in orbit. Six of the ten Block I satellites are still working, and several of them have performed more than twice as long as expected.

In late November, **Strategic Air Command opened U-2 and TR-1 pilot opportunities to women**. Because pilots of these high-altitude reconnaissance planes have to wear a full pres-

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sure suit during missions that often last longer than nine hours, the Air Force Scientific and Advisory Board conducted a study on the possible adverse effects from high-altitude radiation, decompression, recompression, and hypothermia on an undetected fetus and on the compatibility of existing pressure suits with the female physique. The study found no significant medical constraints, but female U-2/TR-1 pilots will be required to take

a pregnancy test every two weeks because of potentially hazardous physiological impacts on a fetus.

The **Northrop B-2A Stealth bomber completed its seventh and eighth flights** during a four-day period in late November. The seventh flight featured the plane's first air starts. Midway through the seven-hour, seventeen-minute flight on November 18, each of the plane's General Electric F118-GE-100 engines was shut down and

then was reignited. Other accomplishments included normal and alternate landing-gear extensions and two aerial refuelings. This flight paved the way for eventual radar-signature testing. The eighth flight, made on November 22, lasted five hours and forty-eight minutes. It continued a series of planned flight control and systems checkout. Air Force Lt. Col. John Small was on both flights, while Northrop pilots Bruce Hinds and Leroy Schroeder flew on the seventh and eighth flights, respectively.

American forces patrolling the West German border in the Fulda Gap area have been ordered to leave their M16 machine guns in the barracks. Instead, the guards will only carry their .45-caliber or 9-mm pistols for self-defense while making their rounds. The order was given so that East German citizens streaming across the border after travel restrictions were lifted last November would not be frightened. There are approximately 500 guards in that region.

On December 22, 1967, Navy Lt. Cmdr. Wilmer Paul Cook, a highly decorated A-4 pilot, was shot down while leading an air strike over North Vietnam. He was listed as missing in action until last year, when his remains were discovered and repatriated. On November 27, 1989, the crew of the frigate USS *Cook* (FF-1083)

held a brief memorial service for Commander Cook and scattered his ashes off the coast of San Diego, Calif. This is believed to be **the first time a Navy ship was involved in the at-sea burial of its namesake.**

★ **DIED**—The **Solar Maximum Mission spacecraft**, the first satellite to be repaired in orbit, of excessive heat and stresses caused by reentry into the atmosphere over Sri Lanka on December 3. It was nearly ten years old. Launched February 14, 1980, Solar Max was designed to study solar flares and the radiation and particle-beam emissions from them, but attitude control was lost in December 1980. During space shuttle mission 41-C in April 1984, astronaut George "Pinkie" Nelson, "flying" in the self-contained Manned Maneuvering Unit, failed to retrieve the satellite with a specially designed capture tool and sent the satellite spinning. After it was stabilized by ground commands, astronaut T. J. Hart was able to catch the satellite on the fly with *Challenger's* remote manipulator arm. Astronauts Nelson and James "Ox" van Hoften then repaired Solar Max in the shuttle's payload bay. It was relaunched and performed well until last November. No word of any of the reentering pieces causing damage on the ground was reported. ■

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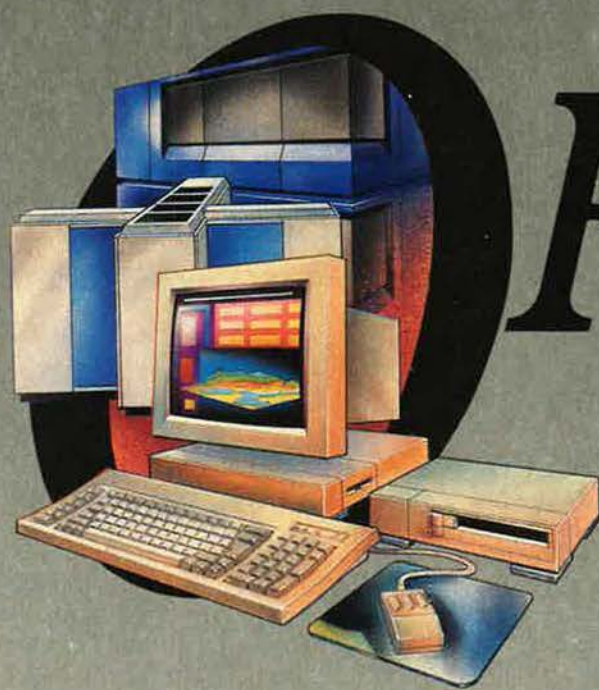
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Sen. Sam Nunn and Rep. Les Aspin differ, both in style and in their approach to the defense program of the future.

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The Chairmen Size It up

By Charles W. Corddry

‘WE have entered the Gorbachev era. The deficit will continue to place severe constraints on all spending, of course. But the next defense budget will be Gorbachev-driven . . . and you can bet that the impact [of events in the East] will not generate support for increasing defense budgets.”

Having said that, in a customary reach for the dramatic and the arresting, House Armed Services Committee Chairman Les Aspin (D-Wis.) then acknowledged that peace was uncertain and put the real-world question: “How do we set defense priorities when our hopes for the future and the realities of the present are still far apart?”

For a contrast to the Aspin view, consider the comment of Senate Armed Services Committee Chairman Sam Nunn (D-Ga.) as 1989 ended and the Defense Department was planning deep slashes in the military force structure over a period of years:

“I believe [the reductions are] fiscal cuts rather than threat-related cuts. The threat has certainly gone down in Europe, and that makes the background music more accom-

modating and soothing to the body politic for these cuts. But even if the threat had not gone down, if the Administration [were to] have any chance whatsoever of meeting the Gramm-Rudman target next year, they would have had to make cuts of this magnitude.”

The Gramm-Rudman target—to avoid automatic federal budget cuts across the board, most heavily in the Defense Department—is a federal deficit reduced to \$64 billion in FY 1991. That would be down from \$100 billion in FY 1990.

Mr. Nunn essentially takes no notice of a shift in tone on the part of Defense Secretary Richard Cheney that puts Mr. Cheney more in sync with the view that threat-reduction justifies defense cuts. “Even though the Secretary said it was because of a reduced threat,” says the Senator, “I think it’s fiscal.”

Thus, two remarkable, and remarkably different, Armed Services Committee Chairmen—the garrulous defense academic, Mr. Aspin, and the ever-so-serious master of defense detail, Mr. Nunn—disagree greatly on the roots of the new budget they now are consider-

ing. Does that matter, if the end product will be further reductions anyway?

It may matter very much, if the cuts look like random adjustments to fall within a deficit target and help avoid new taxes rather than like elements of a new strategy for a radically changing world. The former could invite more cuts; the latter could get some congressional cooperation.

Gorbachev-Driven Budgets

From where Senator Nunn sits, a failure to come up with a rational

Sen. Sam Nunn (D-Ga.), the “truly formidable” Senate Armed Services Committee Chairman, is convinced that the Bush Administration is reining in the defense budget because of fiscal pressures, not because the Soviet threat appears to be easing.



strategic approach based on new threat assessments could be fatal for a Bush Administration hoping to head off more reductions. From the Aspin side, if Mikhail S. Gorbachev is going to drive US budget decisions, one must wonder whether the Soviet President's engaging smiles could bring down the House on voting days.

"Gorbachev-driven budgets," Mr. Aspin said as Congress scurried home last year, "will need to respond to the changes taking place on the other side of the rapidly rusting Iron Curtain."

"Rapidly rusting" seems to be the operative phrase—one of the Aspin attention-grabbers that leaps over details to a budget-slashing conclusion. More realistically, he then grants that "we really don't know how to respond" when facing the prospect of declining Soviet defense spending.

Mr. Nunn does his attention-getting after he has taken all the evidence, found a few key points, and worked out how to bridge differences and achieve the best outcome attainable. For example, he crafted a typically clever solution last year when Congress got one of its periodic itches for troop withdrawals from Europe and for more burden-shifting. A ceiling was put on the percentage of NATO troops that can be composed of US forces. If the Europeans cut their forces, the Americans will cut theirs proportionately.

That outcome was influential in the domestic and international arenas—placating the cutters, pressing the Europeans, and upholding the President in Conventional Armed Forces in Europe (CFE) negotiations in Vienna.

It is wholly in character that Senator Nunn is starting off this year's round of defense authorization hearings with demands for a threat assessment: "What has happened to the threat? What is your strategy? How does the budget fit into it?"

"We didn't have a strategy building up," Mr. Nunn contends. "I hope that, as we're building down, we do have it." Whenever the Georgian fashions a noose, he does it with the executive branch's rope. Mr. Aspin, a Pentagon whiz kid in the McNamara days in the 1960s, tends to swap ideas with the national-

security "priesthood" outside of government and preach those ideas without close contact with what the bureaucracy is up to.

The Committee Chairmen agree that Congress is in an economizing mood, at least so far as defense is concerned, and that the Pentagon still looks like a bank for providing funds for other, unmet needs. But, as Mr. Nunn says, probably recalling some of last year's fiascoes, "there'll be a lot of disagreement about how it ought to be cut."

How could an administration, already removing tens of billions from previous ambitious plans, avoid that?

"The controversy would be greatly reduced," the Senator says, "if there [were] a sense that this budget was put together starting with a threat assessment, an assessment of how the threat has changed, how it's been reduced, what our changes will be in Europe based on that threat reduction, what our obligations are in the Middle East, the Persian Gulf, the Far East, and how those things continue." That would be the "best case."

The worst? "If it looks like it's simply a random series of cuts to meet the Gramm-Rudman targets . . . and if those cuts were to take on any taint of being politically motivated—by that I mean selective cuts in certain areas—then it would make the battle much more intense. . . ."

"Unless the threat assessment is made, unless it's taken into account, unless we have some vision of future strategy, it's going to be much more difficult for the Secretary [Mr. Cheney] and for the Bush Administration to get cooperation."

Budget Summits

The Administration goes into this year's budget wars with another problem that, by the Nunn analysis, it might have avoided. It could have had an executive-congressional budget summit sooner, rather than eventually. Congress would have been less disposed to take the budget submission as a starting point for more slashes—though probably no less inclined, based on last year's House performance, to redistribute money to programs that Mr. Cheney opposed.

"The desirable way," Mr. Nunn

says, "would have been to sit down last fall with Congress and have the President and Congress dealing with the future—three or four years of defense spending—and work this out in connection with domestic cuts and in connection with that awful phrase 'revenue increases' so we really do know where we're going on the deficit and in fiscal policy."

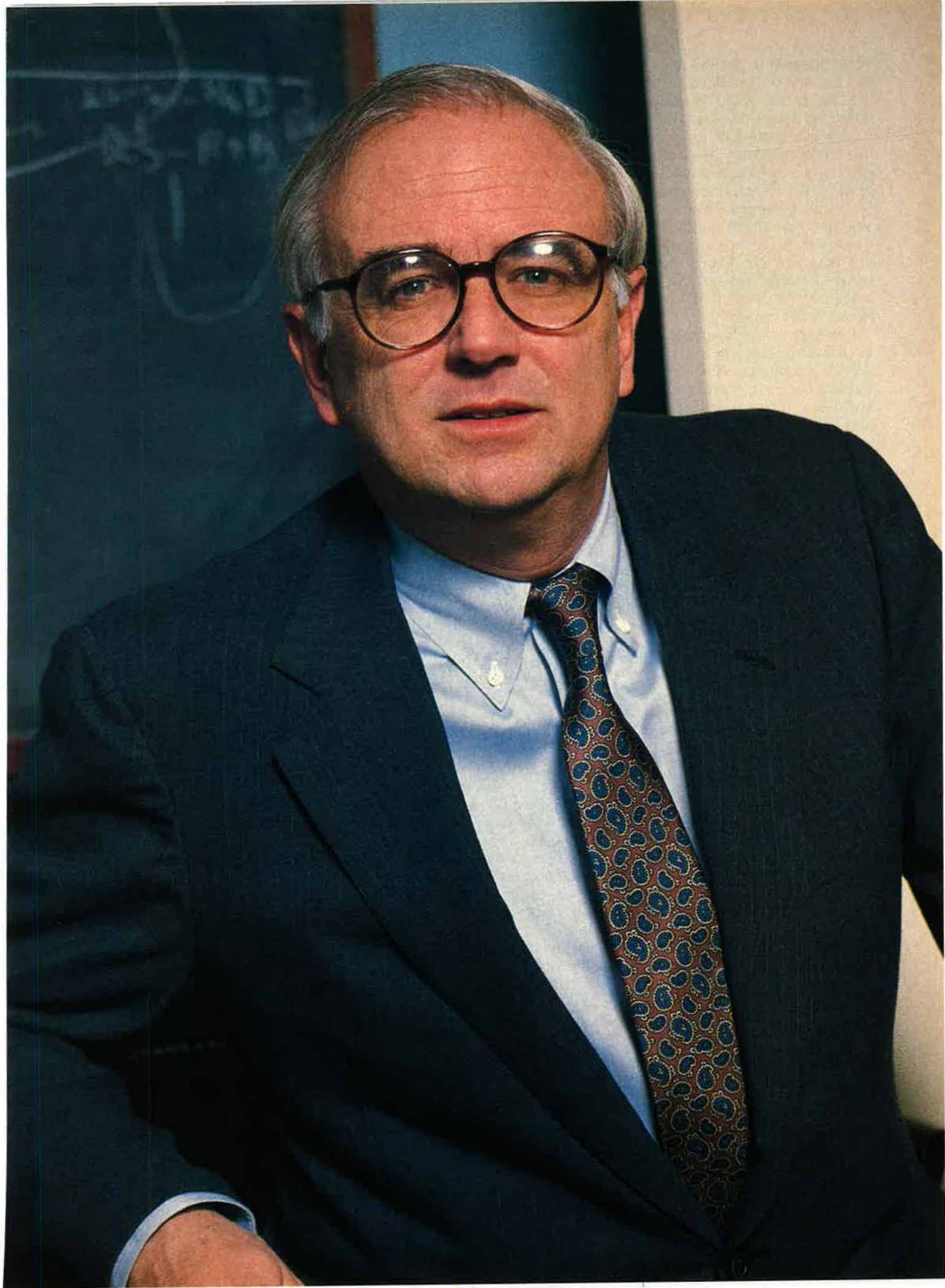
That was not done. The Administration groped from one day to the next with a bewildering, fast-moving series of events and tried to freeze the picture long enough to lay out a defense program that it might live with at least through this congressional session.

It is a five-year projection, with a declining force structure, delays in new systems, program cancellations, and a bleak manpower outlook. But five-year plans—especially their budget top lines—are based on extrapolations from the first year's figures and must be continually revised, not least because of what Congress does to the first-year plan immediately in hand in all its detail. In the expression that Dean Acheson, President Truman's Secretary of State, used in his memoirs to describe early NATO defense planning, there is an effort to "clothe the attainable in respectable strategic theory."

This year could see a new definition of "attainable," depending on how "respectable" Congress finds the submission and what lines the two Chairmen want, and are able, to hold.

Sam Nunn in the Senate is a truly formidable presence, the dominant influence on defense issues. He showed it, for example, last year

House Armed Services Committee Chairman Les Aspin (D-Wis.) disagrees with Senator Nunn on why US defense spending is being reduced. Aspin calls the US defense budget "Gorbachev-driven" and believes it must be retailored to new strategies.



when he handily got the Senate to reverse a Strategic Defense Initiative cut it had voted (presumably reflecting its real position) in order to give him more bargaining power in a conference with the House. He gets on well with the ranking Republican on the Committee, Sen. John W. Warner of Virginia, who in turn is able to short-circuit confrontations wanted by some conservatives in his Party when he knows that protracted wrangles will not change the outcome. Mr. Nunn is not used to losing in the Senate.

Les Aspin in the House, however, is a different story. He is sometimes seen as beholden to liberals in the Democratic Caucus who backed his ascension to power when the late Rep. Melvin Price of Illinois was retired from the job. There are times when those backers are not too keen on defense programs, notably strategic nuclear programs, and other times when they insist on programs if their districts are in danger of losing Pentagon funds.

It would be hard to find members prepared to follow Mr. Aspin out the window. Friends say he is cerebral and aloof when dealing with fellow members of Congress, reserving collegiality for the aforementioned national-security priesthood and backslapping for members of the press. Holding on to his Chairmanship and guarding his flanks on the political left must consume a great deal of his energies.

Trouble in the Caucus

He went into the new session this year in a fence-mending mood. The Democratic Caucus was not ecstatic when the Chairman last year advocated Committee endorsement of an intact Cheney procurement budget for lack of a rational alternative. That budget, among other things, kept the Peacekeeper ICBM program going full-speed into a rail-garrison configuration and terminated ten other programs, most notably the Navy F-14D Tomcat, dear to the hearts of New York members, and the V-22 Osprey tilt-rotor aircraft, dear to the hearts of the Marines and, therefore, many House backers. Mr. Aspin later infuriated fellow House Democrats, after they had restored the aircraft programs and ransacked ICBM plans, by saying they had approved a "Dukakis bud-

get," however accurate or inaccurate his assessment.

Mr. Aspin papered over his failure to carry the Committee with him on the Cheney procurement budget by saying that his colleagues had come up with the "right" alternative, that he had been able to hold down additions to the budget, and that charges of pork-barrel politics overlooked the "high level" of Committee debate. The Committee was "much smarter" than when he joined it eighteen years before, he announced.

It may be more instructive, and may say more about what will happen in the House to this year's more contentious procurement proposals, to recall the comments of the committee's ranking Republican, Bill Dickinson of Alabama, bemoaning the lack of Democratic support (only nine of thirty-one on the committee) for the Chairman.

For years, he said, Congress had demanded that the Pentagon set priorities in the face of declining budgets. When Mr. Cheney called the bluff and proposed cancellations, "we threw in the cards and dealt Cheney a new hand that signifies 'business as usual.' . . . The [Committee] members added several costly major programs to the budget."

If there was a lack of discipline in the Armed Services Committee, there was rigorous discipline on the House floor, exercised fully by the Democratic leadership against its Committee Chairman. The airplane issue was "whipped"—that is, the Party Whip's organization went into action to save the F-14D and V-22—and so was the Chairman.

Mr. Nunn, meanwhile, got his Committee and the Senate to back the Cheney procurement budget. When the defense authorization bill got to a Senate-House conference, the House paid dearly in strategic weapons concessions for a compromise allowing procurement of only eighteen F-14Ds and completion of research and development on the V-22. Mr. Aspin, who had to bring back an airplane victory, told the House that higher-than-wanted funding for SDI, the B-2 bomber, and ICBMs were "the logical result of the House's firm insistence that any conference [result] contain funds for the F-14 Tomcat fighter."

Mr. Gorbachev may have increased the comfort level for defense cutters, but he will not be the only force driving budget decisions in the House. Last year's proposed program terminations galvanized the Majority Whip's organization in behalf of constituent interests. This organization may be in for a frenzied round this spring and summer. When asked whether the two Committee Chairmen might agree on the direction the defense build-down should take, Mr. Nunn said that, if the two Chairmen were the only parties involved, there would be a good chance of agreement, "but there are so many outside forces both in the Senate and the House, probably more of those in the House. . . . It won't be a two-man show. Les has increasing numbers of people he needs to check with."

Changes in the Threat

How do they view developments in the Soviet Union and Eastern Europe and changes in "the threat"? The short answer is, not too differently.

There appears to be no disagreement with the Administration position that Soviet strategic arms modernization continues apace. Mr. Aspin puts it this way:

"Here, the Soviets continue their across-the-board modernization program. That includes two mobile missiles, the SS-24 in railroad cars and the road-mobile SS-25; a more capable 'heavy' ICBM, the fifth-generation SS-18; two bombers, the Bear-H and the Blackjack; and finally, two strategic missile-carrying submarines, the Delta-IV and the Typhoon."

He says the program has been slowed in two respects. Weapons that would be taken down under a strategic arms limitation treaty are not being modernized. There apparently have been production cuts for the Blackjack bomber and Typhoon submarine because of problems with the systems.

"In short," says Mr. Aspin, "the Soviet approach so far on strategic forces has not been one of unilateral reductions. This is fundamentally different from its approach to conventional forces," in which, he notes, the Soviets have "a marked numerical superiority . . . in Europe."

Mr. Aspin led a Committee delegation to East Germany and the Soviet Union in 1989 to look into progress on Mr. Gorbachev's promise to withdraw six tank divisions, air assault troops, and other formations from eastern Europe, reducing forces there by 50,000 men and 5,300 tanks. The overall size of the Soviet forces would be cut, Mr. Gorbachev said, by 500,000 men.

The conclusion, as Mr. Aspin stated it in November, was that withdrawals from eastern Europe were on track, "but not precisely as advertised." He reckoned that about half the tanks, troops, and divisions had gone, but the Soviets were restructuring units remaining in eastern Europe by adding infantry fighting vehicles and artillery.

The organizational changes, by Soviet claims, mean that the twenty-four divisions remaining in eastern Europe will be more defensively oriented. Edward L. Warner III, a RAND Corp. defense analyst who accompanied the Committee, testified later that "these Soviet divisions will represent a highly versatile combat force that is equally capable of conducting either modern, maneuver-oriented offensive or defensive operations."

Even so, Mr. Warner concluded—and Mr. Aspin agreed—that the combat power of Soviet ground forces in eastern Europe would be reduced by twenty to twenty-five percent when withdrawals and reorganizations were completed by the end of 1990. As for the promised much larger cuts in the western Soviet Union, Mr. Aspin says that "so far, there is little evidence that these reductions are taking place. We don't yet know what is going on there."

From all these data and from early evidence of a downward trend in Soviet military outlays, Mr. Aspin reaches a conclusion: "Anyone who tells the public that nothing is happening to reduce the threat risks the credibility necessary to set sensible defense priorities."

Senator Nunn seems less hurried, waiting to analyze the threat assessment he has insisted on and to see how it fits with the new budget. He underlines the obvious: Poland under Solidarity, Hungary "running away from the Communist Party," East Germany with an open border

and calls for free elections, Czechoslovakia in upheaval, and a Soviet Union carrying out unilateral withdrawals "has got to change the threat."

What he wants is a deeper analysis of the changes and a credible explanation of how military planning responds to them.

Affecting Policy and Strategy

How can the Chairmen affect defense policy and strategy? By legislation, like the ceiling enacted last year on troop commitments in Europe; by actions on individual weapon systems, though that legislation tends to be piecemeal and, often enough, temporary; by hammering on themes in speeches to drum up support; and by highly visible congressional hearings.

"You can have some gradual influence on the thinking in the [Pentagon] building and hope that they themselves come to the same conclusions," Mr. Nunn said, almost wistfully. He was speaking specifically about his conviction that US forces should be restructured to provide less of NATO's armor, to be rapidly redeployable to Third World crises, and to have varying degrees of readiness depending on the missions assigned to them and the timing for carrying them out.

He has talked about some of this since as far back as 1983. "One thing you have to have around here," he says, "is patience."

The reduced threat of surprise attack may justify large changes in the relation between airlift and sealift. A unit needed on D+90 does not have to be kept at as high a state of readiness as one shipping out, or flying out, on D+10.

"Unless we're planning on invading Mexico or Canada," Mr. Nunn says, "a lot of these military forces are maintained at a higher state of readiness back here than is necessary."

That does not mean unreadiness by inadvertence, "reductions in readiness that come about because of lack of spare parts and personnel." A part of the challenge under

the deliberately reduced readiness he has in mind "would be to get the readiness level up in a certain period of time; that's a totally different thing than letting readiness deteriorate inadvertently because of budget cuts."

How would Senator Nunn assign priorities? If the threat in Europe "changes as much as it looks like it might," his priorities for high states of readiness would go to forces earmarked for "Third World contingencies, regional contingencies, Middle East-type contingencies, even contingencies relating to Korea. . . . It would be Naval, Marine, light Army, Special Forces, that kind of thing. The forces that could have less priority now would be those that are more related to a European scenario," in Mr. Nunn's view.

Such changes would be logical, he says, but the logic has to come from the Pentagon.

"I have my own logic," the Senator says, "but there's no way that I can take a Pentagon budget that has no threat assessment or strategy related to it and carve it into something that fits the Nunn strategy. I'd be foolish to think I could do that."

A similar application of logic, in both the Nunn and Aspin views, would call for careful review of new major weapon systems that have not yet reached production, specifically the advanced Air Force and Navy tactical aircraft. Mr. Nunn would include the proposed upgrade of the Army's M1 tank, which he says is essentially a new tank, the Navy's SSN-21 attack submarine, and the Air Force's C-17 transport.

The B-2 bomber? "That's going to be reviewed independently of the threat," says Mr. Nunn, who strongly backs the aircraft. "There's a performance cost assessment required on that one, even if Stalin were in power."

Too modestly perhaps, on the matter of impact on policy regarding NATO and the chance of "carving" strategy into the defense budget, Mr. Nunn says the system does not allow it. "I'm one of the monkeys," he insists, "not the whole circus." ■

Charles W. Corddry, Washington-based defense correspondent for the Baltimore Sun, has covered military and foreign-policy issues for more than forty-eight years. He is a regular panelist on the Public Broadcasting System's program "Washington Week in Review."

DEFENSE planners wore out their pencil erasers in 1989. It was the year of four budgets. Between January and November, the Pentagon's fiscal guidance for Fiscal 1990 changed again and again.

When the wheel finally stopped spinning—on Thanksgiving Eve, almost two months into the fiscal year in which the money would be spent—budget authority had plummeted by some \$12 billion from the amount projected on January 9.

The final funding level was lower than that requested by Secretary of Defense Richard Cheney in the third of the four budgets (see box), and Congress had moved significant chunks of money around, retailoring the program more to its own liking.

It was a wilder year than most, but in the best of times the defense budget process is messy. Things seldom work out in accordance with the orderly procedures and steps prescribed. In addition to disagreements on substance, there is trouble with time. In 1976, the government changed the beginning of the fiscal year from July 1 to October 1, but it didn't help much. Since 1954, Congress has completed its budget work on time exactly once—in 1988.

Official Washington, the Pentagon included, lives, eats, and breathes the federal budget. It is the primary means by which the nation's civilian leadership exercises control over the nation's defense program. That makes it the primary meeting ground between the Pentagon, the White House, and Congress.

Budgets are also a major way by which the Office of the Secretary of Defense (OSD) and the services exercise control over subordinate units. Directly or indirectly, the budget consumes more of the Pentagon's activity than anything else.

On any given day, the Defense Department will be working on several different budgets, more or less concurrently. An Air Force "primer" circulated widely in the Pentagon explains it this way: "As of October 1988, we were *spending* at FY 1989 levels, *defending* the FY 1990-91 budget with OMB/OSD, *mending* the budget with our FY 1990-94 program, and *pretending* by beginning to work on the FY 1992-97 POM [Program Objective Memorandum]."

The defense budget process, in actuality, doesn't look much like the idealized model that civics students might imagine.

Spending, Mending, Defending— and Pretending

By Colleen A. Nash, Associate Editor

The budget process is awash in jargon and abbreviations. Understanding some of them is essential to understanding what's going on.

Three Snapshots

The broadest view is the Biennial Planning, Programming, and Budgeting System (BPPBS), which insiders describe as evolutionary, having no beginning or end. In each budget cycle, however, the BPPBS provides three "snapshots" of the program as a whole.

• *The POM (Program Objective Memorandum)*. As the saying goes, "If it's not in the POM, it's not in the

budget." Each of the services develops a POM as its basic negotiating position. This is the part of the process where all of the various funding requests are combined, sifted, and assigned priority.

The POM season usually runs from April through August, with lots of reviewing, redrafting, and horse-trading. OSD and the Joint Chiefs of Staff see preliminary versions, and their guidance to the services becomes more detailed.

• *The BES (Budget Estimate Submission).* For practical purposes, the BES is a final POM, with "fact of life" adjustments. Each service prepares its BES in accordance with OSD directions. It is completed around September. Appropriately, its middle name is "estimate," and it is the subject of heavy dickering and high-level adjusting in the Pentagon.

• *The President's Budget.* In December, the Pentagon submits the program and financial plan it proposes as part of the President's overall budget proposal. By law, the President must submit his budget to Congress on the first Monday following January 3, but delays have been known to crop up.

In practice, it's not a clear-cut path from POM to BES to budget. There is constant negotiating and tweaking of the numbers among the players at all levels. Furthermore, the planning and number-crunching begin long before the main POM season opens in the spring.

The most fundamental of all Pentagon planning documents is the Five-Year Defense Plan, the FYDP. The armed forces have long-range plans that extend twenty years into the future, but for five years out the planning gets much firmer. The FYDP, formally approved by the Secretary of Defense, summarizes operational plans and the resources required to carry them out. (Beginning with the Fiscal 1992-97 POM, the Pentagon will make the transition to a Six-Year Defense Plan, the SYDP.)

Realities and Complications

Running alongside requirements-based planning—and having at least as much influence on the budget outcome—is the "fiscal guidance" that projects funding levels for the next several years. The services get their guidance from OSD, but the real source is the White House.

Prior to the "budget summit" of 1987, the Pentagon's fiscal guidance was to plan for "real" (after-inflation) growth of three percent a year. The Carlucci budget of last January forecast two percent real growth. President Bush changed that guidance to a funding freeze for Fiscal Year 1990, followed by one percent real growth in 1991 and 1992 and two percent real growth in 1993. More recently, the services were told to plan for reductions (called "negative real growth" in budgetese) that could be as large as two percent for 1992 through 1994.

The Year of Four Defense Budgets

Budget One, the "Carlucci Budget," submitted January 9 by Secretary of Defense Frank Carlucci on behalf of the outgoing Reagan Administration, requested \$305.6 billion in budget authority and \$293.8 billion in outlays for Fiscal Year 1990. This would have given the Pentagon two percent "real" (after-inflation) growth, in keeping with the 1987 "budget summit" at which Carlucci had cut the Five-Year Defense Plan (FYDP) by a tenth.

Budget Two, the "Bush Recall," was presented to Congress March 14 by Deputy Secretary of Defense William H. Taft IV. Upon taking office, President Bush recalled the two percent growth budget and said he would seek zero percent real growth instead. This took another \$60.5 billion out of FYDP and, for Fiscal 1990, projected \$299.3 billion in budget authority and \$291.2 billion in outlays.

Budget Three, the "Cheney Budget," was presented to Congress April 25 by new Secretary of Defense Richard Cheney. It was \$10 billion below the Carlucci request for 1990, seeking \$295.6 billion in budget authority and \$289.8 billion in outlays.

Budget Four, the "Thanksgiving Eve Budget," which passed Congress November 25, was only \$2 billion or so below the Cheney budget, but Congress made numerous changes in the line items. Budget Four may not be final, either. The Administration has told the services to hold up on spending some of the congressional add-ons.



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Funding instability—universally regarded as one of the worst problems in defense management—is getting worse instead of better. At the urging of the Packard Commission in 1986, Congress and the Administration agreed to budget for defense biennially rather than a single year at a time. The first biennial budget, however, was torn up at the 1987 budget summit, and the concept never really took root. As one Pentagon official says, “biennial budgeting works—but biennial appropriating hasn’t.”

It’s easy for outsiders to be confused about the defense budget because the amount of it can be—and is—expressed in a variety of ways.

First, there is the “entire program,” which counts defense work in the Department of Energy (which does nuclear warhead work, for one thing) and other non-Defense agencies. This amount (\$303.2 billion in 1990 budget authority) is higher than the “direct program” (\$293.5 billion in 1990), which the Pentagon and the services run themselves.

The total can also be expressed as “budget authority” or as “outlays.” Budget authority is the sum that the Department can obligate during the year, while outlays refer to amount of funds actually expended.

In the military personnel account, for example, first-year outlays come to about ninety-five percent of budget authority. In Operation and Maintenance (O&M), such outlays are seventy-six percent of budget authority. Investment accounts “outlay” (it’s a verb in the budget world) more slowly. In aircraft procurement, for example, only eight percent of the budget authority outlays in the first year. When it’s necessary to cut outlays in a hurry, Personnel and O&M usually take a beating.

When the President’s budget reaches Congress, it is farmed out in pieces to various committees. The legislators work on the federal budget in its entirety for only a few days each year. Mostly, they concern themselves with thirteen spending bills, of which Defense is one.

They begin with a budget resolution, which establishes a total target amount for the thirteen spending bills. This resolution, however, is philosophical and nonbinding. The real action lies ahead.

The Senate and the House proceed separately on *authorization* bills, then confer to work out the differences in the two. Upon completion of this version of the budget, though, Congress has not completely slipped the realm of the theoretical. No money has yet been voted.

The meaningful money debate comes on the *appropriations* bills, which are also treated separately by the two Houses of Congress, with differences resolved in conference.

In practice, the process is even more tangled than it sounds. Congress is not bound by its previous resolution and authorization votes. A member can vote “yea” on a program in authorization and then can vote “nay” on appropriating money for it. A program’s having passed the authorization vote is no assurance that it will survive appropriation. And programs not approved in authorization can be added at this point.

If Congress is not satisfied with the results of the thirteen appropriations measures—or if the total does not meet the deficit target set by the Gramm-Rudman-Hollings Act—a *reconciliation* bill may be required as a final cut.

No Shortage of Oversight

As Congress wades through the budget resolution, the authorization and appropriations bills, and on toward reconciliation, Pentagon officials parade almost daily to Capitol Hill to testify before the committees. They are there to clarify points and answer questions, but it’s also their chance to make final pitches for their programs.

The House and Senate Armed Services Committees are the focal point of much of the testimony, but they are hardly alone in exercising oversight of defense.

In his Defense Management Review report last year, Secretary Cheney noted that thirty congressional committees, seventy-seven subcommittees, and four panels are in the defense oversight business. On an average day, he said, the Pentagon gets 450 written inquiries and another 2,500 by telephone from Capitol Hill. The Department of Defense spends more than 3,000 man-hours a day preparing reports for Congress. ■

Only one bird is magnificent enough
to be the symbol of a nation.



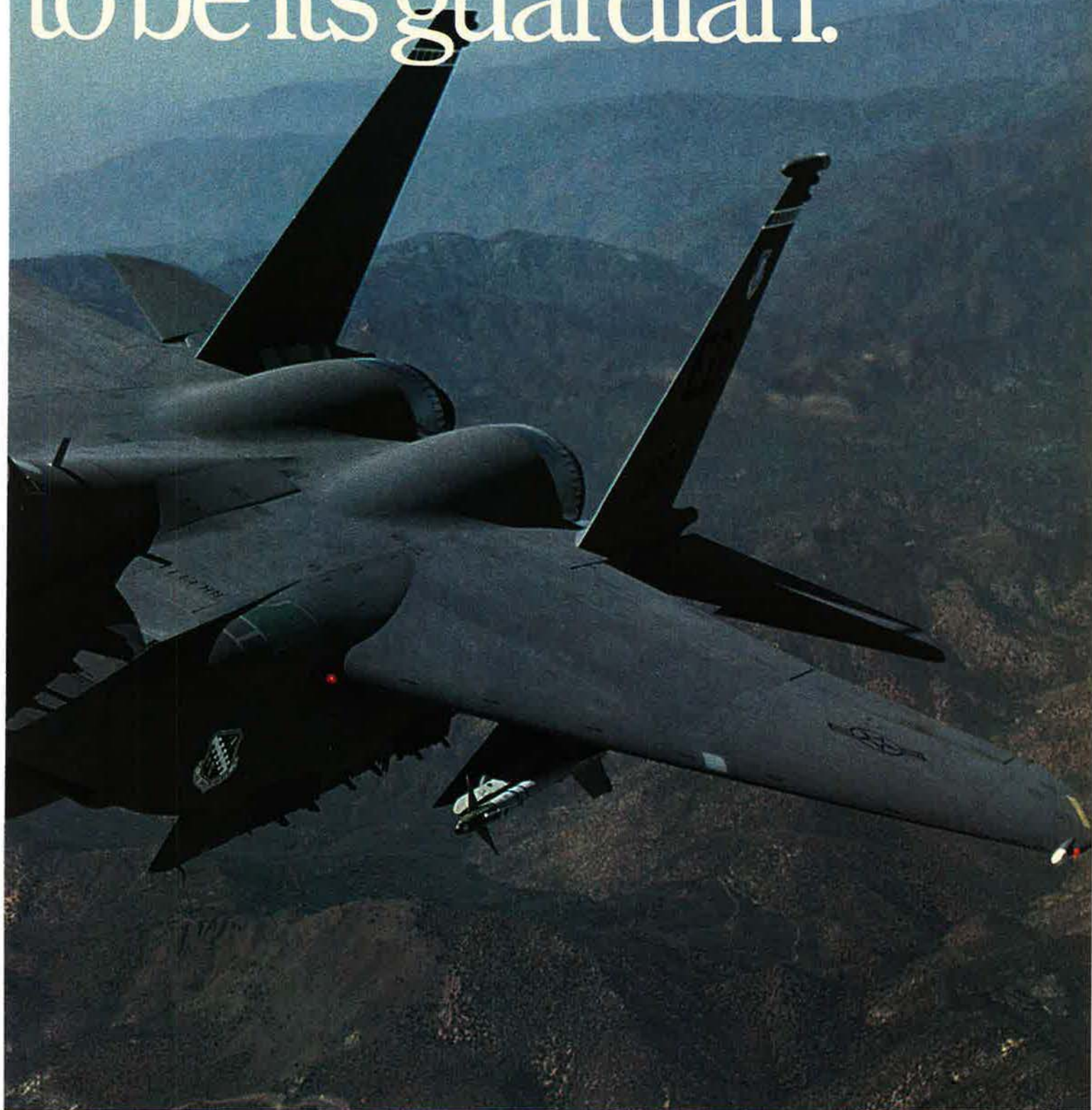
And strong enough



America's Eagle, the F-15E. So powerful it can climb like a rocket to knock enemy aircraft—or even a satellite—out of the sky. So agile it maneuvers the way only an Eagle can. So advanced it is the perfect partner for 21st century fighters.

Built for the U.S. Air Force by McDonnell Douglas, the F-15E is right for a time when more must be done with fewer resources. When we must expect greater capability from a smaller arsenal. And America's Eagle comes through. It stands alone, ready to deliver the

to be its guardian.



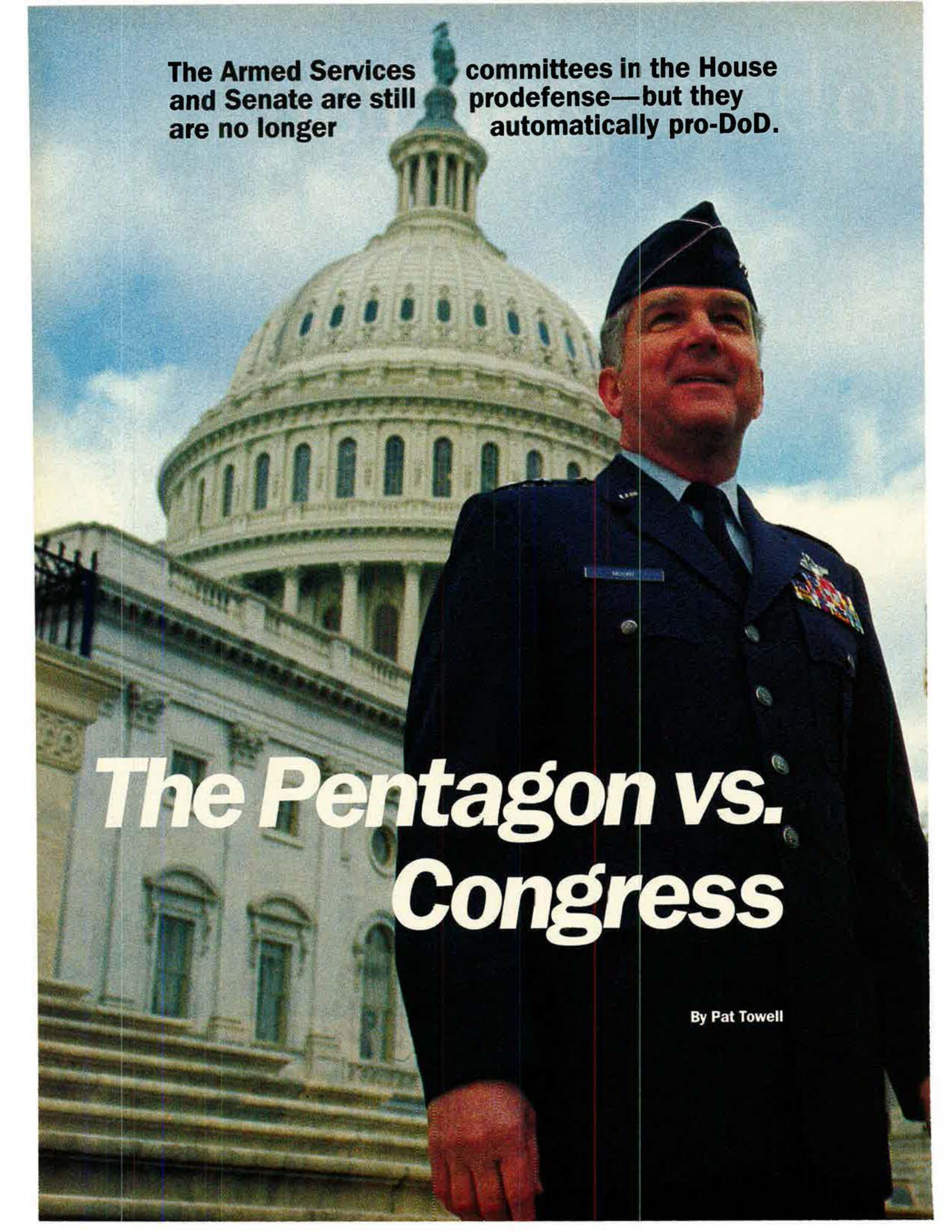
world's most powerful one-two punch.

Unmatched air-to-air or air-to-ground,
the Eagle's strength is in its superior flexibility.
And America's strength is in its guardian—
America's Eagle, the F-15E.



THE F-15E

EAGLE

A man in a dark blue military uniform with a peaked cap and several medals on his chest stands in front of the U.S. Capitol building. The Capitol's dome is prominent in the background under a blue sky with light clouds. The man is looking upwards and to the right.

**The Armed Services
and Senate are still
are no longer**

**committees in the House
prodefense—but they
automatically pro-DoD.**

The Pentagon vs. Congress

By Pat Towell



—Staff photo by Guy Acpio

IF you think congressional micro-management of defense is bad these days, consider what happened in 1775.

In addition to parceling out contracts for the Navy's first thirteen frigates, the Naval Committee of the Continental Congress installed the Chairman's brother—one Esek Hopkins—as the Continental Navy's first Commander in Chief.

By that standard, 1989 was pretty tame. The scope and depth of legislative second-guessing ran at about the level one would expect in a representative government that spends a third of its annual budget on defense.

Congress as a whole set a handful of limits for the defense program, most of them quite general. For instance, by way of setting national priorities, it insisted on a national defense budget top line that was some \$12 billion less than what President Reagan proposed in January 1989.

The four defense committees on Capitol Hill tested the program against certain standards of their own, including budgetary realism (in the case of B-2 procurement), managerial discipline (in the case of

those constituent-oriented initiatives were relatively minor.

Indeed, the most striking thing about Defense Secretary Dick Cheney's proposal to terminate nine major programs is that he won on eight of them, leaving the fate of one—the V-22 Osprey—to be settled this year. Editorial hand-wringing notwithstanding, Mr. Cheney clearly won the battle of the Grumman F-14D, with the proviso that he pony up the equivalent of a \$1 billion impact assistance grant to Long

and favored programs against the effects of Pentagon austerity.

That scramble will occur while major change is taking place in the world. Thus, members of Congress may feel freer to seek even deeper cuts in defense spending than heretofore envisioned, and they may aim at programs that previously seemed safe.

Even so, 1990 finds the Pentagon establishment in its strongest position in years to deal with Capitol Hill. In Mr. Cheney, it has its most



—Staff photo by Guy Aceto

The Pentagon establishment is gearing up for the FY 1991 defense budget tussle with Congress. Some of USAF's players are (from left, preceding pages) Maj. Gen. Burt Moore, Director of Legislative Liaison, Office of the Secretary of the Air Force; Maj. Jeffrey A. Sponsler, Congressional Inquiry Division; and Maj. Charles J. O'Connor III, Program Liaison Division.

the advanced cruise missile), and equity among allies (in the case of the proposed new base at Crotona, Italy, for F-16s of the 401st Tactical Fighter Wing).

In addition to those changes, which arguably reflected bona fide policy differences, there was the inevitable legislative tinkering in support of parochial interests. But in the grand scheme of things, most of

Island in the form of one last buy of eighteen planes.

The Itch to Micromanage

This year, the incentives for Congress to second-guess the Fiscal 1991 defense budget request will be particularly strong.

For one thing, the budget crunch is more horrendous than ever. The Gramm-Rudman Act prohibits a deficit of more than \$64 billion, and President Bush remains utterly opposed to new taxes. As the President and Mr. Cheney clearly understand, Congress will not tolerate a budget in which domestic programs are cut while the Pentagon appears to dodge the bullet.

Already, the overall fiscal situation has driven the defense budget well below levels predicted only a year ago. That means that members of Congress—including, paradoxically, some of the lawmakers who are most adamant that the Pentagon share in budgetary pain—will be scrambling to shield constituents

politically astute civilian chief since Melvin Laird was Defense Secretary during Nixon's first term. A keen political strategist, Secretary Cheney is esteemed by former colleagues in both parties as a straight shooter, one who is willing to consider members' views and to challenge them head-on when he disagrees.

Other key Administration players also are highly regarded on Capitol Hill. These include White House National Security Advisor Brent Scowcroft and Defense Under Secretary for Policy Paul Wolfowitz. Defense committees also seem well disposed toward Deputy Defense Secretary Donald Atwood and Under Secretary for Acquisition John Betti, who will be the department's chief guides through the political minefield that is acquisition policy. The Air Force is particularly well-situated, with Secretary Donald Rice being well-known and well-regarded by many key Hill operatives, who first encountered him

during his years at the helm of the RAND Corp.

Moreover, the defense committees are in the best shape in years to shepherd Secretary Cheney's program through the legislative labyrinth if—and the proviso is a vital one—it meets basic requirements of political realism as well as the committees' own standards. House and Senate Armed Services Committee Chairmen Rep. Les Aspin (D-Wis.) and Sen. Sam Nunn (D-Ga.) would be among the first to concede that coherent, broad-gauged policy is more likely to emerge from the executive branch than from Congress. On the other hand, neither one will mortgage his own or his committee's political capital in defense of a politically hopeless cause.

The Power to Obstruct

Though the legislative branch cannot set policy, save in the most unusual circumstances, it does have considerable power to obstruct executive branch efforts that ignore what Congress sees as its prerogative to set bounds on the defense program. How deeply Congress intervenes in the Fiscal 1991 program will depend, in large part, on the extent to which the program meets some well-established congressional demands.

For Congress as a whole, the most potent of these standards is its insistence on general budgetary limits. What is important is not so much what a given defense budget buys, but rather the context in which members view that program.

In the mid-1970s, when real Pentagon spending was declining while the Soviet defense budget increased apace, liberals and conservatives alike judged a politician's stance on defense budgets as shorthand for how seriously he viewed the Soviet challenge and his view of military force as an instrument of foreign policy.

By the end of President Carter's term, Soviet adventurism and a series of US embarrassments—most dramatically, the Iranian seizure of the US Embassy in Tehran—had tilted public sentiment strongly in favor of the more muscular national posture promised in 1980 by Ronald Reagan and the GOP, represented by their promise of a sharp boost in defense spending.

But by 1983—as the 1981 tax cut began to fuel a serious fiscal problem—the defense budget's import vis-à-vis the USSR began to matter less on Capitol Hill than its effect on domestic programs. By the time Reagan's second term got under way in 1985, the prevailing view in Congress clearly was that the country had more interest in controlling the federal deficit than it had in continuing the defense buildup.

In a real sense, the Gramm-Rudman Deficit Reduction Act, requir-

effort programs that can be pared almost at will.

Now the assumption may be taking root that the US is entitled to a "peace dividend" because the threat to Europe is declining. If so, Congress will demand some reductions in the Pentagon budget even if President Bush finds a way to avoid domestic cuts.

Another general theme is the demand for restraint in strategic arms procurement and arms-control policy.



—Staff photo by Guy Aceto

ing the defense budget to absorb half of whatever cuts were needed to meet prescribed limits on annual deficits, merely formalized a political bind already afflicting the Defense Department.

Those budgetary concerns have driven congressional demands for a real decline in defense spending each year since 1985. They also have underpinned the cuts made in a few very large programs, notably SDI each year since 1986 and, last year, the B-2.

A Peace Dividend

In making such broad judgment calls, Congress as a whole is virtually oblivious even to fundamental premises of programs on the block, such as SDIO's goal of allowing an informed decision by 1994 on first-phase deployment or the relationship between the size of the proposed B-2 buy and coverage of the Soviet target set after START reductions. These multibillion-dollar projects are seen, rather, as level-of-

By his second term, President Reagan had pretty well co-opted the "peace" issue in the electorate at large, partly by use of sweeping antinuclear rhetoric in association with SDI and partly by the outcome of summit exchanges with Soviet leader Mikhail Gorbachev. Liberal activists in the House continued to pass arms-control policy initiatives almost routinely. But these proposals—for instance, a ban on nuclear test explosions larger than one kiloton—lacked the same broad, grass-roots support that had energized earlier campaigns for a nuclear weapons freeze and a cap on deployment of Peacekeeper missiles. They were easily brushed aside by the Senate.

There was another group of strategic arms issues, however, on which President Reagan got steam-rolled—right up to the end of his term—by arms-control liberals in alliance with defense-minded Democrats such as Senator Nunn and Representative Aspin. Chief among

these were the flight-test ban on the antisatellite weapon, repudiation of the Administration's interpretation of the 1972 US-Soviet ABM Treaty, and imposition of numerical limits on strategic nuclear delivery vehicles with multiple warheads that were threatening to breach sublimits of the unratified SALT II Treaty.

In these cases, Senator Nunn and other centrists held that, as a practical matter, the United States would come off worse in an unrestrained competition with the Soviet Union.

President Bush shows no desire to overturn existing strategic arms limitations. Still, in an era of declining defense budgets, congressional bias toward strategic arms restraint may foster questions about all three legs of the strategic triad (How many Trident submarines? What is improved B-1B penetration capability worth?) and the importance of strategic warning (How critical is ICBM mobility?).

Pervasive Attitudes

Two additional attitudes pervade congressional views of the defense program.

Congress may demand reductions in the Pentagon's budget based on the declining threat in Europe. It may also call for restraint in strategic arms procurement and arms-control policy. This may lead to renewed scrutiny of the strategic triad and the importance of strategic warning—programs that the Pentagon previously considered safe from cuts.

- Congress refuses to consider the defense program in isolation. For example, late in 1989, it nipped DoD—along with domestic programs—to fund the war on drugs (\$1.2 billion) and to aid Poland and Hungary (\$140 million). Similarly, it has refused to grant the Pentagon even limited relief from toxic waste cleanup procedures mandated by the Resource Conservation and Re-

covery Act, and it is demanding that safety and environmental considerations take precedence over nuclear materials production in the Energy Department's nuclear weapons complex.

- There is a perception that current procurement policies and practices are too easy on the services and defense contractors. This feeling has declined somewhat since the mid-1980s, when some procurement "reform" votes were, in effect, symbolic swipes at then-Defense

ability independent of strategic warning. Whether that position has survived changes in the budgetary and strategic arenas remains to be seen.

While committees do promote such policy-specific views, committee actions most frequently reflect general attitudes.

Each committee is fundamentally inclined to keep faith with its parent body—the Senate or House—on truly "hot button" issues. This fact can easily be overlooked in the case



—Staff photo by Guy Aceto

Secretary Caspar Weinberger, who is no longer there to be kicked around. Another reason for the change is that the House Armed Services Committee today is seen by more members as a reliable overseer of the Pentagon to which the House should defer on complex, technical issues—a status that Senate Armed Services never lost in the Senate.

No congressional committee can be said literally to have an "opinion," but there are relatively consistent patterns of action that different members support for different—sometimes contradictory—reasons. In the case of the Armed Services and Defense Appropriations panels, some of these "opinions" are fairly specific, reflecting substantive expertise of some members and of professional staffers.

For at least fifteen years, for example, the prevailing view in both Armed Services panels has been that any ICBM modernization plan should provide for missile surviv-

of the Senate Armed Services Committee, which seems thoroughly to dominate Senate action on defense issues. For three decades, that Committee has been headed by particularly influential Chairmen. Because the Senate is less overtly partisan than the House, the Reagan years did not produce in the Senate nearly the number of feuds seen in the House.

Defense in the Senate

Even so, SASC under Senator Nunn and ranking Republican Sen. John W. Warner (R-Va.) has been quite deferential to Senate requirements when the requirements are unambiguous. Last year, for instance, the "budget summit" agreement between the White House and the joint congressional leadership included a limit on outlays, which required shifting several billion dollars from the fast-spending appropriations for military personnel and operations into the slower-spending procurement account. As a matter

of overall budget policy, such a shift was downright bizarre, but, rather than stand in the path of a political locomotive, SASC conceded to the Appropriations Committee unfettered control over several billion dollars worth of unauthorized appropriations.

If observers typically underrate the political constraints on the Senate Armed Services Committee, they frequently overestimate the scope of constraints on its House counterpart.

more independent in their approach to the defense establishment. The panels are still resolutely pro-defense, by their own lights, but they no longer are automatically pro-DoD.

Operational Fiascoes

The new attitude has been evolving since the early 1980s, as members pondered the operational fiascoes of Desert One and Beirut, the troublingly prolonged and inelegant "rescue" operation in Grenada, and

missions that Congress suspects that the services regard as peripheral. Special Operations programs, for example, often get a boost in Congress, and committees keep close watch on Air Force plans for close air support and Navy treatment of sealift.

- The services' long-term acquisition programs are oblivious to fiscal reality. House Defense Appropriations' sharp attack on the ATF program last year reflected this assumption, as did Senate Defense Appropriations' restriction on the production rate for which the C-17 line could be tooled up. House Armed Services members may be close to demanding a less ambitious funding profile for the B-2 on "affordability" grounds.

- The services' past mismanagement of major programs justifies close oversight of program plans and execution. It will take the Air Force years to win back the credibility it lost on this score in the B-1B/ALQ-161 affair. By the same token, authorizers and appropriators alike were close to drastic action against the advanced cruise missile program last year, in response to a series of test failures, which—according to the committees—had nothing in common but a lax approach to quality control by Air Force and contractor personnel.

As for the substance of the program, the committees—and, to some degree, Congress as a whole—will insist on significant indications that the department is coming to grips with an international political environment that has changed more in the last year than in the previous twenty.

No one expects radical changes in the US posture before advertised changes in the adversary's posture actually come about. But if the department expects its natural political allies to help fend off free-lance field marshals, it will have to give them a program they can sell their colleagues—one that includes reversible steps in anticipation of a more stable military balance with the East, as well as prudent hedges against the risk that reform in the East might fail. ■



—Staff photo by Guy Aceto

The House Armed Services Committee has been transformed over the last five years. The most important fact about the shift is that it was *not* started by liberal Democrats trying to move HASC to the political left. Rather, the changes were sparked by Democrats such as Dave McCurdy of Oklahoma and Ike Skelton of Missouri—men from the party's center and right who wanted to make the panel a more significant factor in House deliberations.

Fairly or not, the Committee had come to be seen as unresponsive to the House on some fundamental issues and as an uncritical advocate for those it was supposed to oversee, particularly the uniformed leadership of the services.

The key point is that, under this new regime, HASC's hands are tied on only a handful of such fundamental issues in any given year.

While the two Armed Services Committees were becoming more responsive to their parent bodies in the 1980s, they also were becoming

the embarrassing series of acquisition anomalies symbolized by overpriced hammers and toilet seats.

From this more skeptical attitude have evolved several assumptions that have underpinned some of the Committee's more celebrated "micromanagement" initiatives of the late 1980s. These assumptions are that:

- "Joint" needs should take priority over service needs. The detailed Goldwater-Nichols Act on personnel policy demonstrates the Armed Services panels' determination to change the balance of power between the services and joint institutions. It also reveals the depth of Committee mistrust of the services' willingness to abide by Congress's wishes.

- Missions peripheral to a service's ethos risk being ignored. There will be special scrutiny on

Pat Towell, a senior writer for Congressional Quarterly, has covered defense issues on Capitol Hill for fourteen years. This is his first article for AIR FORCE Magazine.

If your aircraft is ailing, count yourself lucky if TSgt. Wendell Keener, Crew Chief of the Year, is around.

The Man Who Fixes Things

By Susan Katz-Keating

TSGT. Wendell Keener was one of those kids who seemed to have the knack for everything. He was the staff artist for his high school yearbook. He was also editor of the school newspaper, was an avid chess player, and participated in the local 4-H Club. He managed to do all this while maintaining a near-perfect academic average of ninety-six percent.

He also had a hobby. The son of a garage owner, young Wendell spent his free time with his head stuck under the hood of a car, learning the ins and outs of pistons and carburetors.

"I learned to do engine work early," says Sergeant Keener, whose childhood affinity for mechanics led to an adult interest in the supercharged world of jet propulsion. The Air Force taught him how to tinker with aircraft engines. As his teachers at Rabun County (Ga.) High School could have predicted, Sergeant Keener did not settle for being a competent or even an excellent aircraft maintenance technician. He wanted to become the best and, sure enough, he made it.

Now an F-4E crew chief at Seymour Johnson AFB, N. C., he was honored by the Air Force Association as the 1989 Air Force Outstanding Crew Chief of the Year. It was a proud moment for Sergeant Keener and his teammates at the 4th Aircraft Generation Squadron, 4th Tactical Fighter Wing. Although he shies away from taking personal credit for the honor, a glance at his record shows that Sergeant Keener must have been doing something right.

Shortly after graduating from technical school, he started showing signs that the achiever in him was hard at work.

First came an award as Crew Chief of the Year for the 52d Tactical Fighter Wing at Spangdahlem AB, Germany. Then he was named Maintenance Technician of the Year for the 81st Aircraft Maintenance Unit. He was a member of the overall best F-4 team in USAFE and was named Number One Crew Chief for the Best Reconnaissance and Defense Suppression Integrated Combat Turn in USAFE.

In addition, he earned accolades as the Distinguished Graduate of the 17th Air Force Noncommissioned Officer School. All of this was accomplished while supporting off-duty activities such as the Little League Athletic Youth Association and the Volksmarch Club.

Everything a Commander Could Ask For

Sergeant Keener arrived at Seymour Johnson in June 1987. Since that time, he has been described as amassing "a vast collection of noteworthy achievements," among which was a particularly high honor: Due to his outstanding performance record, Sergeant Keener's aircraft was selected as the aircraft of the 335th Tactical Fighter Squadron Commander.

Sergeant Keener's aircraft, number 72-0128, was everything a commander could ask for. In Fiscal Year 1988, for example, the aircraft registered a fully mission-capable rate of 91.3 percent. From April through June 1988, the fighter held an FMC rate of ninety-three percent while maintaining a bombing capability standard of ninety-nine percent. During sixty-nine sorties flown in a two-month period, Sergeant Keener's plane received fifty-one "Code One" (no fixes necessary), eighteen "Code Two" (no mission-critical fixes necessary), and

zero "Code Three" (maintenance action necessary) write-ups.

Sergeant Keener has a remarkable eye for detail. During one preflight inspection of his Phantom, for instance, he saw that an engine oil pressure line had been improperly routed. This resulted in an immediate one-time inspection of all aircraft in the wing—and the discovery that a total of eighteen aircraft had similarly misrouted oil lines. Technicians were able to correct the problem before major damage occurred.

On another occasion, Sergeant Keener determined that centerline sway braces could have a longer life span

lems with excessive oil consumption necessitated replacing the engine. It was then discovered that the stabilator actuator return line was leaking hydraulic fluid. Sergeant Keener, who had been pursuing pneudraulics and jet engine expertise through Rivet Workforce transition training, was able to remove, repair, and reinstall the defective flange on the line, enabling the aircraft to return home safely.

His talent came in handy again at Langley AFB, Va., when a drag chute cable broke on an RF-4 flown by the Commander of the 67th Tactical Reconnaissance Wing. The airplane was participating in Dissimilar Air Combat

TSgt. Wendell Keener, AFA's 1989 Air Force Outstanding Crew Chief of the Year, is shown here in his F-4E Phantom, number 72-0128, which was selected as the 335th Tactical Fighter Squadron Commander's aircraft.



—USAF photo by SrA Jeff Wolfe

if high-speed centerline tanks were installed differently. He suggested that the squadron's consolidated tool kits should add a special wrench to install the centerline tanks. The long-term benefit was worth the cost. Use of the wrench extends the life of centerline sway braces from two years to four years. That translates into an annual saving of \$2,400 for the 4th TFW.

After being named the Dropped Object Monitor for the 335th AMU, Sergeant Keener designed and implemented a pretaxi panel security checklist. The checklist helped the 335th AMU attain a ninety percent reduction in dropped objects, leading to cost savings. He also wrote and instituted deicing procedures for the F-4E, saving twenty man-hours and \$450 per day. Sergeant Keener has gotten a 100 percent rating on all of his Quality Assurance evaluations.

Sergeant Keener was chosen to represent the 335th AMU as the Area Turn Supervisor for the Integrated Combat Turns during the Turkey Shoot competitions held in August 1988 and February 1989. In both competitions, his team was selected best in the 4th TFW.

Averting Disasters

In August 1988, a hangar fuel spill threatened lives and equipment. Sergeant Keener quickly analyzed the danger and organized a rapid evacuation of personnel. He was able to provide the base fire department with unobstructed access to the hangared aircraft, which greatly minimized the potential for disaster.

When a 4th TFW aircraft ran into trouble on a cross-country run, Sergeant Keener was rushed to Dyess AFB, Tex., to repair the jet's number one engine. Prob-

lems with excessive oil consumption necessitated replacing the engine. It was then discovered that the stabilator actuator return line was leaking hydraulic fluid. Sergeant Keener, who had been pursuing pneudraulics and jet engine expertise through Rivet Workforce transition training, was able to remove, repair, and reinstall the defective flange on the line, enabling the aircraft to return home safely.

His talent came in handy again at Langley AFB, Va., when a drag chute cable broke on an RF-4 flown by the Commander of the 67th Tactical Reconnaissance Wing. The airplane was participating in Dissimilar Air Combat

Tactics Training at the time. Sergeant Keener was present at the exercise in support of the 4th TFW aircraft. He volunteered to repair the RF-4.

Sergeant Keener was in charge of the aircraft flown by the Vice Commander of the 4th Tactical Fighter Wing at Red Flag 89-3 at Nellis AFB, Nev. During preflight procedures, Sergeant Keener detected a loose flight control stick, which he repaired in time for the aircraft to complete a scheduled sortie.

In addition to all this, Sergeant Keener remains a well-rounded individual. For example, he has never abandoned the flair for journalism he displayed in high school.

"I don't write regularly for local newspapers," he says, "but any time I see anything that I feel needs to be said, I write it up for the base newspaper." That recently took the form of two articles promoting a greater appreciation of maintenance.

He currently maintains a perfect grade-point average of 4.0 in pursuit of an Associate's Degree through the Community College of the Air Force. "I'm almost done with my associate degree," he says, "and after that, I want a BA in management."

He and his wife Lisa are actively involved in morale-boosting activities, such as the "Welcome Home" receptions held by the 335th AMU for TDY personnel. ■

Susan Katz-Keating, a writer for Insight Magazine since 1985, specializes in military topics. Her most recent article for AIR FORCE Magazine, "The Outstanding Airmen of 1989," appeared in the September 1989 issue.



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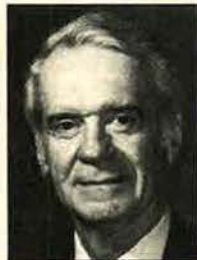


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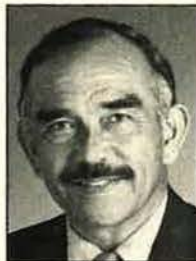
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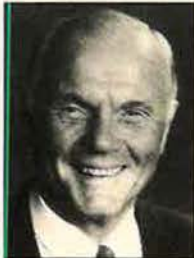
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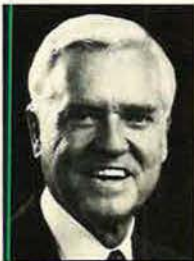
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By John L. Frisbee, Contributing Editor

The Seventh Man

Capt. John Mize knew the B-52 could not make it to U-Tapao. Perhaps it could get to friendly territory, given a miracle.

CAPT. JOHN D. Mize bent his B-52D into a sharp turn away from his objective, a surface-to-air missile (SAM) site, VN-243, near Hanoi. It was his fourth Linebacker II mission and his 295th in Southeast Asia. December 27, 1972, was the ninth day of the "eleven-day war" that finally brought North Vietnam to the truce table, led to return of the POWs, and lowered the curtain on direct American participation in the Vietnam War.

Seconds after bombs away, Captain Mize, copilot Capt. Terrence Gruters, and gunner TSgt. Peter Whalen counted a barrage of fifteen SAMs headed their way. Already they had evaded several SAMs in the target area, but not a mass firing of this size. Fourteen of the missiles missed, but the fifteenth exploded with a tremendous concussion between the Number 4 engine and the fuselage. Shrapnel hit Captain Mize in the left thigh, lower leg, and hand. Sergeant Whalen and radar navigator Capt. Bill North were wounded in the legs. The cockpit was filled with debris. Before Captain Mize could react, 200 tons of aircraft plunged toward the earth, with all four engines of the left wing knocked out, engine Number 1 on fire, navigation and engine instruments inoperative, and most of the

power boost for flight controls gone. Only one alternator, the radio, and cockpit lights were functioning.

With virtually no power boost, it took a superhuman effort by Captains Mize and Gruters to regain control of the shattered bomber. After a rapid damage assessment, Captain Mize knew they could not make it back to U-Tapao in Thailand, where the 28th Bombardment Group was based. "The question was," says Mize, "how far we could get before we had to abandon the aircraft." Whether anyone had flown a damaged B-52 with all engines out on one side, using only needle, ball, and airspeed (the latter erratic and undependable), he didn't know, but they would give it their best shot. "Everyone knew what to do," Captain Mize said. "They were absolutely professional in every respect."

As soon as the bomber was under control, navigator Lt. Bill Robinson gave Captain Mize a dead-reckoning heading from their last known position to friendly territory. Separated from the other bombers in Ash cell and with no defensive systems operational, the B-52 limped westward toward Nakhon Phanom (NKP) in northern Thailand. How long would the badly damaged left wing hold? What other structural damage had the aircraft sustained? No one knew.

In order to maintain bailout altitude, Captain Mize repeatedly descended 1,500 feet, then climbed back 1,000 feet. Over northern Laos their desperate situation began to de-

teriorate still further. The bomb bay doors fell open, one side of the landing gear began to cycle up and down, and other electrical systems went haywire. Forty-five minutes after they were hit, it was time to bail out, but navigator Robinson calculated they were over jagged mountains. Another thirty miles would put them over flat land near NKP—if the burned and battered left wing held.

As they approached NKP, Captain Mize felt "a kind of death throes" run through the B-52. He called each crew member, ordering him to bail out. Copilot Gruters, Sergeant Whalen, radar navigator Capt. Bill North, and EWO Capt. Dennis Anderson (the last two, from the 7th Bombardment Group, were substitutes on the mission) went out on order, but Lieutenant Robinson's seat would not eject.

Lieutenant Robinson told Captain Mize that he would go out the hole where the radar navigator had ejected. Since there would be no contact with Lieutenant Robinson after he left his seat, Captain Mize, knowing the left wing could go any moment, told Lieutenant Robinson he would stay with the aircraft for three minutes, giving the navigator time to bail out. Before that time was up, all electrical systems failed, signaling the end of that B-52. Captain Mize called Lieutenant Robinson once more. Getting no response, he punched out as the aircraft went down. All crew members were picked up by rescue choppers within a few minutes.

For his superb airmanship and for laying his life on the line to assure Lieutenant Robinson's escape, Capt. John Mize was awarded the Air Force Cross, the first SAC man to receive that medal. The other crew members were awarded the Distinguished Flying Cross for heroism, and all six received the Purple Heart for wounds and injuries suffered in their night bailout.

Now retired and living in Oscoda, Mich., John Mize believes "there was a Seventh Man aboard" on that memorable night. Who could argue the point? ■



Four members of the 28th Bombardment Group B-52D crew who miraculously managed to get their badly damaged aircraft back to friendly territory: from left, Lt. Bill Robinson, Capt. Terrence Gruters, TSgt. Peter Whalen, and pilot Capt. John Mize.

The future belongs to forces that can deploy far and fast, going into action immediately upon arrival.

The Watchword Is Flexibility

By James W. Canan, Senior Editor

THE Air Force has figured out how to build standoff weapons that it can afford, and it will concentrate on putting them into operation in numbers large enough to make a difference.

Those smart weapons and deep-interdiction aircraft are essential to the success of NATO doctrine and tactics. They will become even more important as the Warsaw Pact cuts back on front-line forces and must rely more heavily on the mobility of rear-echelon units.

Stealth is here to stay. All future Air Force combat aircraft will be Stealthy.

The Advanced Tactical Fighter will continue to rate top priority, but its affordability is a concern. Additional technology/performance tradeoffs are in store for the ATF.

Air Force champions of the F-15E will continue to push to restore the dual-role fighter to the full production run originally planned.

The European theater will continue to command much of USAF's attention and resources, but formidable threats can be expected from a widening array of potential adversaries, increasingly well-armed with



The Air Force, intent on staying strong while trimming down, is building multi-purpose tactical forces featuring swift fighters, such as F-15Es (above), and standoff weapons, such as the AGM-130 missile (right). A boosted variant of the GBU-15 glide bomb, the AGM-130 seems to substantiate USAF's claim that it finally has standoff weapons well in hand.

—USAF photo by TSgt. Ray Williams

—USAF photo by TSgt. Fernando Serna



high-tech weapons, in other parts of the world.

The Air Force will probably be forced to withdraw from some overseas bases and lose some "forward presence," so it must become increasingly capable of carrying out tactical operations over greater distances.

These points were made in various contexts by Air Force leaders who addressed an Air Force Association symposium titled "The US Air Force—Today and Tomorrow" late last year in Los Angeles, Calif. Taking place at a time of great uncertainty, with the defense budget on the downswing and the cold war seemingly on the wane, the symposium may have brought forth more questions than answers about such issues as the size, systems, and makeup of tomorrow's Air Force.

But one thing came through clearly: The Air Force expects to play an increasingly important and active part in carrying out national military strategy, now being reshaped to quell the threats anticipated in the years ahead.

Flexibility and Rapid Employment

Gen. Larry D. Welch, Air Force Chief of Staff, claimed that "air forces are particularly well suited for the diverse roles" that such a strategy will require, because of their "flexibility and capability for rapid employment across the spectrum of conflict."

The AFA symposium antedated landmark events in East Germany and other Soviet-bloc nations last November that greatly relaxed, for the time being at least, East-West tensions in Europe. But geopolitical developments leading up to those events had been evident for some time, and the Air Force leaders who addressed AFA's Los Angeles gathering took them into account in their remarks.

Secretary of the Air Force Donald Rice warned, for example, that USAF must take care not to lose muscle tone and fall out of fighting trim while slimming down. Noting budgetary and arms-control constraints on the Air Force, along with "positive trends in the East" toward greater comity with the West, Dr. Rice declared:

"We're going to be making some



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This F-15, poised for action out of Alaska, exemplifies USAF's determination to get better and better at deploying tactical forces on the double to wherever they are needed, given the likelihood that USAF will be pressured to reduce its forward presence in Europe and the Pacific for a number of years to come.

reductions, no two ways about that. But the key for us will be to hold on to the capabilities that are important for us to keep, against the eventuality of a turnaround in those trends."

General Welch reassured the audience in this regard. "We may become somewhat smaller, but we'll still be capable," he declared.

The Air Force Chief of Staff said that the US will not turn its back on the European theater and that it will stick with its demonstrably successful strategy there of "flexible response, forward presence, and rapid reinforcement." He noted that the Air Force has "traditionally regarded central Europe as the epitome of the high-threat environment, calling for highest-capability aircraft."

General Welch emphasized, though, that "high-quality, high-technology" weapons and other military systems are "proliferating around the world." This means that "in the not-too-distant future, we will face threats, in some contingencies, that are every bit as difficult to deal with as those we are used to dealing with in central Europe," the Chief of Staff asserted.

He continued, "Distances to key targets in all theaters will make our capability for the long-range strike an increasingly high priority. Distances will become more of an issue

as we become more concerned with places in southwest Asia and the Pacific, as well as with the deep targets in Europe."

USAF's requirement to provide air support for the land battle "has been paramount in central Europe, but is now recognized as equally valid in Pacific and southwest Asia scenarios," he said.

As a result, the Air Force "will focus intently" on improving its capability for "delivering highly effective ordnance deep in enemy territory," the Chief of Staff declared. This puts a premium on standoff weapons, he affirmed.

General Welch declared, "I believe we have finally reached the point where we truly know how to build effective standoff weapons, and there are new technologies on the horizon that will enable us to do that even more effectively. So you will see a higher priority and an increased emphasis on complementing manned aircraft with standoff weapons of various kinds."

Manned vs. Unmanned

Over the years, the Air Force has been accused by some critics of being so caught up in building manned fighters that it has deliberately neglected developing unmanned aircraft and other types of autonomous weapons.

General Welch denied this. He

said the truth is that "we have had years and years of high expectations for standoff weapons without much delivery on those expectations." Moreover, "we have not had good luck with pilotless vehicles. There's been nobody in them to push the circuit breakers when they hiccup. Finally, though, after all these years, we now know how to build them."

At the same time, said the Chief of Staff, the Air Force will continue to give high priority to "highly capable penetrating fighters" for deep interdiction and other tactical missions requiring the employment of long-distance airpower. Citing examples of such aircraft, he specified the F-15E dual-role fighter and the planned Air Force variant of the Stealthy, subsonic A-12 attack aircraft now being developed by the Navy.

"If current attitudes in Congress and in some Allied nations persist, we will find it increasingly difficult to maintain the level of forward presence that we ought to maintain," General Welch said. "That will force us to put an even higher premium on flexible forces that can deploy rapidly with minimal logistics support and minimal logistics tail once deployed, be effective immediately on arrival, and operate with a premium on speed, Stealth, lethality, and range."

What this adds up to, said the Chief of Staff, is "even more emphasis on reliability and maintainability and on airlift forces that can go quickly wherever we need them to go."

The C-17 airlifter and the Advanced Tactical Fighter will be linchpins of such forces, he said.

"Our capability to deploy tactical forces has improved dramatically over the years and continues to improve," General Welch declared. He noted that F-86 fighters had to be ferried to Korea on aircraft carriers during the conflict there nearly forty years ago and that twenty-eight airlift sorties were required to deploy a squadron of F-4s, logistics tail and all, to southeast Asia during the Vietnam War.

ATF Still in Favor

"Today," he went on, "a squadron of F-16s can deploy with half that airlift support, and faster, if neces-

sary. The number of support aircraft will continue to decline with the ATF."

The Chief of Staff left no doubt that the ATF will maintain its place of high favor among future Air Force tactical systems.

"Over the years," he said, "we have seen air defenses drive us to low-altitude operations. That's an inefficient way, at best, to provide tactical air support, and it's totally unacceptable for air superiority. We cannot deal with the high-tech, high-quality, look-down, shoot-down threat while operating at low altitudes.

"That means we have to have an airplane that can provide air superiority at times and places of our choosing, at all altitudes. This demands the qualities that we are focusing on in the Advanced Tactical Fighter."

Prominent among such qualities is low observability, or Stealth, which General Welch discussed in the contexts of the ATF and the B-2 bomber.

"The B-2 embodies fourth-generation low-observable technology," he said. "It integrates efficient aerodynamic performance with very low observability in a large, long-range, high-payload combat aircraft. The ATF is the fifth generation of low-observable technology, in that it adds high maneuverability and high speed."

General Welch said that the capabilities and survivability provided by such technology "guarantee that Stealth will be a key feature of future combat aircraft," and added, "I predict that we have already fielded our last new fixed-wing combat aircraft that does not incorporate Stealth technology."

Secretary Rice sounded a cautionary note on the ATF. He called it "clearly a top priority program for the future" and added that "we do not believe that it will be threatened by the budget trends.

"However, the question of affordability is going to loom large in that program," Dr. Rice asserted.

He explained that the Air Force extended the ATF program's demonstration/validation phase by about six months because "we need more time to collect data" from the competing Lockheed and Northrop ATF prototypes.

"We still have a lot of tradeoffs to consider on [ATF] requirements, and that affordability question will get a lot of attention as we deal with those tradeoffs," the Air Force Secretary said. He added that affordability will also be a prime consideration in decisions on ATF "technology closure"—on when to stop developing various technologies and start incorporating them in the aircraft.

Gen. Robert D. Russ, Commander of Tactical Air Command, called



The revolutionary Advanced Tactical Fighter, shown here as an artist's concept, will continue to hold top rank among Air Force tactical systems in development. Its cost is a problem, though, and more cost/performance tradeoffs lie ahead.

—Photo courtesy of Lockheed Corp.

the ATF "an absolute must" for tomorrow's Air Force and declared, "I don't know of anybody—in industry, on Capitol Hill, or anywhere else—who doesn't support our requirement for the ATF. But that doesn't mean that everybody supports each and every individual requirement for the ATF."

General Russ said that the Air

pilot in his right mind would rather stand off than overfly a target and get shot at.

"But we've been frustrated in our efforts to find standoff weapons that we can afford to buy in sufficient numbers to make a difference."

Now, he said, USAF is coming up with "new and improved weapons with better effectiveness and im-

many different things, all of them superbly."

Under budgetary pressure, USAF decided at the beginning of this year to cut short the production run of F-15Es and to order only about half of the 400 F-15Es once deemed indispensable. General Russ made it clear that he was not wild about that decision.

"Maybe we won't have a force structure large enough to support more F-15Es, but I would like to see more, because of the capability they have," the TAC Commander declared. "If we can find the funds, it would certainly be high on my list to 'plus up' the numbers."

The F-15E and FOFA

Sentiment may be building in Congress to do just that. The FY 1990 defense authorization bill that the lawmakers passed subsequent to the AFA symposium indicates as much. It instructs the Defense Department to assess the risks involved for the Air Force in ending F-15E production before USAF can be sure of when—or whether—it will get its promised variant of the Navy's A-12 attack aircraft.

At the AFA symposium, General Russ asserted, "The TAF [tactical air forces] Commanders agree that the F-15E will be a superb weapon for executing the interdiction mission far behind the lines, around the clock, in poor weather, and in one pass." Thus the F-15E is just the airplane for NATO's Follow-On Forces Attack (FOFA) doctrine, he said.

Gen. James P. McCarthy, Deputy Commander in Chief of US European Command, explained that doctrine at the symposium and declared that "improving our capability to jointly interdict follow-on forces is our highest priority for modernization of conventional forces."

General McCarthy claimed that NATO's FOFA doctrine "becomes even more important, more critical as the Soviets lower their force levels."

Why? Because the Soviets "will have to depend more on bringing maneuver units forward," he said, and deep interdiction will be the means of "keeping those forces from massing and getting to the battlefield in numbers that can affect the outcome."



An F-15E dual-role fighter launches an AGM-65B TV-guided Maverick missile designed mainly for destroying enemy tanks. Under heavy budgetary pressure, USAF decided early last year to buy only about half of its originally planned number of F-15Es. Champions of the aircraft are pushing to reverse that decision.

Force is continuing to "weigh the requirements against our ability to meet them" and that it may relax more of them than it already has.

But USAF fully intends to "come out with a superb, next-generation, air-superiority fighter that is a revolutionary change—an unprecedented blend of supersonic cruise, Stealth, and survivability—and there are lots of different ways to do that," the TAC Commander said.

He also put in a good word for the formerly hush-hush F-117 Stealth fighter. "Its revolutionary Stealth technology renders existing adversary radar networks virtually obsolete," he declared.

Improved Standoff Weapons

General Russ reaffirmed that standoff weapons are ascendant among Air Force priorities. USAF's tactical arm has "always strongly supported standoff munitions because of the increased survivability they offer," he said. "Any fighter

proved standoff ranges. We've doubled the warhead size of the tank-killing Maverick missile, and we've made great improvements in standoff capability with the low-level laser guided bomb, the GBU-15, and the AGM-130, a product-improved GBU-15. The AGM-130 doesn't meet all our standoff needs, but it is highly accurate, has a low unit cost, and is what we need now and can afford."

In some circles, the GBU-15 glide bomb does not qualify as a true standoff weapon. Its range is only about five miles when launched at customary ground-attack altitudes. But the AGM-130, a boosted GBU-15 capable of flying at least three times as far, fills the bill. The Air Force is also working up standoff weapons of much greater range, such as the tactical air-to-surface missile (TASM).

General Russ also declared his "strong advocacy" of the F-15E dual-role fighter, "because it does so



The C-17 airlifter, touted for its versatility on tactical and strategic missions, is called a linchpin of US military strategy, now being reshaped. That strategy puts increasing emphasis on mobility—moving forces within theaters and to them from bases in the US. Theater CINCs give the C-17 strong support.

Deep interdiction of enemy follow-on forces will also serve to buy time “to enable us to get into position to bring our own reinforcements forward,” he said.

The General underscored the importance of tactical reconnaissance to the success of the FOFA doctrine. He said the Joint STARS system now being developed by USAF “will significantly improve our capability” for such reconnaissance, “but will have limitations.” He hailed the Defense Department’s emphasis on forging “a combination of manned reconnaissance and unmanned reconnaissance” systems.

In this connection, said General McCarthy, “everyone agrees that the RF-4, while still a stalwart, has been around a long time and needs to be replaced.” He said he favors the F-16, outfitted with a reconnaissance pod, as the RF-4’s successor, because “it offers many capabilities and would give us flexibility.”

US European Command has a crying need for more and faster means of bringing in reinforcements from the US, a requirement that will become even stiffer if negotiations on cutting conventional forces result in a drawdown of US troops on the continent, General McCarthy said.

He added, “Our commitment to bring ten divisions [to Europe] in ten days is not possible without fast

airlift, and the C-17 will be essential to this. But I don’t know of any way to accelerate the C-17 program in today’s fiscal environment, so I’m not advocating that.”

Fast Sealift

“Fast sealift” is the near-term solution, and the NATO high command is pushing for much more of it, General McCarthy said. He noted that this move is regarded in some circles as being “anti-C-17,” but added that “nothing could be farther from the truth.” NATO proponents of fast sealift “do not look on it as competition with the C-17 and would not give up the C-17 resources in order to get it,” he declared.

Addressing the AFA symposium, Gen. Merrill A. McPeak, Commander in Chief of Pacific Air Forces, called rapid reinforcement and forward deployment the cornerstones of US Pacific Command’s strategic approach to defending a vast geographical region in which, “while it may come as a surprise to many, our military presence is really rather modest.”

Although the US Navy is dominant in PACOM, most of its assets are “rearward, home-ported on the West Coast and in Hawaii,” he said, and added, “By contrast with the Navy, the Army and the Air Force are relatively small—but forward deployed.”

All along, PACAF has had to make do with five combat fighter wings composed of about 300 tactical fighters, “but these are in-place, ready-to-fight aircraft stationed in Korea, Japan, and the Philippines,” General McPeak said. He noted that the incorporation of Alaskan Air Command into PACOM last July added two combat wings.

“US access to forward bases is a principal feature of the network of alliances we have built in the Pacific,” the General asserted. He claimed that US strategy and military presence have greatly contributed to “creating regional stability and allowing for rapid economic growth” and to “the emergence and strengthening of democratic structures in many of the nations.”

General McPeak took issue with critics who claim that the US could save big money by withdrawing forces from some places in the Pacific.

He acknowledged that “it is a little more expensive to operate forces overseas,” but added that “we pay a rather modest premium to operate our forces in Korea or Okinawa instead of in Michigan or California. Moreover, our allies can and do share the burden.

“We ought to be very careful about threatening to dismantle our structure of forward deployments,” the General asserted.

Asked whether political pressures at home and in the Philippines will eventually bring the US military presence there to an end, General McPeak replied, “I believe it will be a terrible tragedy for us and for the Philippine people if we are forced to leave, and I think there is a good possibility that we will have to do that. I am not optimistic about that whole situation.”

He described the Philippines as vital to “our line of communication into southeast Asia and toward the Indian Ocean” and as “the place where we [PACAF] get a big part of our quality tactical training.

“We have examined alternatives, such as moving forces rearward to Guam or reshuffling them to Korea and Japan, maybe withdrawing them to Alaska or even Hawaii. But none of those options is very good, because of the geography. So the Philippines would be very difficult for us to replace.” ■

The Air Force pleads for less micromanagement and second-guessing while it sorts out changes in defense management.

How About Some Breathing Room?

By James W. Canan, Senior Editor

THE Air Force, setting out this month to justify its new budget, is appealing to Congress to back off and give it breathing room to streamline and manage its acquisition system as it sees fit.

Congress can do this, USAF claims, by getting rid of its onerous procurement regulations and easing up in its micromanagement of defense acquisition across the board.

Appeals for congressional cooperation were made in one form or another by several speakers at the Air Force Association symposium titled "The Air Force—Today and Tomorrow," held late last year in Los Angeles, Calif.

Secretary of the Air Force Donald B. Rice struck the theme. He noted that the goal of the Defense Management Review, still in the works at symposium time, was to save \$30 billion over five years throughout the defense establishment by "cutting bureaucratic layers, streamlining procurement and logistics, consolidating related jobs, and the like."

Dr. Rice declared, "The only way we're going to be able to do this is with Congress's help. They can

make it easier for us to implement the DMR by holding the line on procurement laws and rolling back the ones that impede the acquisition business."

The Air Force Secretary emphasized that a vital part of the DMR had been "a joint-service scrub of those laws" from the start.

Gen. Larry D. Welch, Air Force Chief of Staff, declared, "I am convinced we can build a very good Air Force, capable of doing what it needs to do, with the kind of budgets we are anticipating. But we can't do it if we're micromanaged at every level and second-guessed on every program, or if the cost of every program gets elevated by delays and stretches imposed from outside the Air Force."

Gen. Bernard P. Randolph, Commander of Air Force Systems Command, said he welcomed the DMR and regards its goal of \$30 billion in savings as "actually pretty modest. But it certainly will not be achieved with a business-as-usual attitude. We'll have harder choices and fewer people."

The AFSC Commander, who is scheduled to retire from USAF

March 1, blamed "congressional micromanagement" for having "created a miasma of excessive oversight and unwarranted legislation."

"Don't misunderstand me," he continued. "Nobody can spend nearly \$30 billion of taxpayer money like Systems Command does and not have politicians interested in it. We want Congress to be interested in how the money is spent, but I wish Congress were equally interested in how all the other tax dollars are spent."

A Preview of Proposals

Dr. Rice gave the symposium attendees a preview of proposals being worked up by the Air Force for revising procurement laws and regulations. USAF planned to submit them to Congress early this year, requesting that the lawmakers:

- *Relax requirements on the level of savings to be gained by multiyear contracting.*

"At the moment," said Dr. Rice, "our third F-16 multiyear contract is being held hostage by the law, even though it would save about \$400 million. Its estimated savings did not meet the legislative requirements. But its benefits, in terms of program savings and stability, should not be denied by a failure to meet an arbitrary savings percentage."

- *Make it easier for the Air Force to buy commercial products off the shelf without going through a lot of defense-procurement rigamarole required by law.*

"Right now, legislative restrictions make it tough for us to buy commercially," Dr. Rice said. "We want to enter the marketplace in some areas just as other consumers do and use commercial practices to buy commercial products when it's smart business to do so."

He added that USAF also seeks congressional permission to order certain kinds of products "without discussion" from "contractors with proven track records," even when the contractors do not happen to be the lowest bidders.

- *Temper conflict-of-interest laws and others having to do with "work force accountability."*

"Our leaders and managers need authority commensurate with their responsibility," declared the Air Force Secretary. "We would wel-

come relief from legal constraints that tie our hands when it comes to recruiting good people, including senior industry leaders who want to work in public service."

He asserted, "If Congress would work with us in these and other areas, our acquisition process would thrive, and the Defense Management Review will succeed."

Dr. Rice called the DMR "a boon for us as we gear up to make reduc-

argins while maintaining the core," he continued. "We will keep core modernization programs and core combat capabilities—the ones that give us the greatest deterrence—on track."

"We may get somewhat smaller, but we will maintain a very high-quality capability."

At the AFA symposium, Secretary Rice and General Welch made it clear that they had considered

“The more money we can save through management efficiencies and by streamlining...the less we'll have to take from force structure and modernization....”

tions in the next few years" and "a management strategy demanded by today's pressures that is right for the times."

He elaborated, "The more money we can save through management efficiencies and by streamlining our organizations, the less we'll have to take from force structure and modernization in the next round of budget cuts."

General Welch sized up the DMR as a powerful instrument for change, saying, "We started out seeing it as a way to operate more effectively by streamlining and eliminating layers of oversight that don't add any value. That alone is a worthy purpose. But we will move, under the banner of DMR, far beyond the streamlining of management, because there are many other things that we will have to do to use our resources most intelligently within the limits of the budget reductions."

Those reductions will force the Air Force to "give up some real capabilities, some things that will reduce combat effectiveness," General Welch acknowledged. "But we will give up those things . . . on the

consolidating Air Force Systems Command and Air Force Logistics Command but had decided against it for the time being.

An Air Force analysis "showed that a merger would bring considerable savings, but also identified many questions that require further study before a more efficient single command could be designed," Dr. Rice explained.

"On the other hand," he continued, "streamlining the two commands clearly offers substantial opportunities for savings and efficiencies in the short run."

Consequently, USAF decided to "defer the question of merging the commands so as to capture the streamlining gains," the Air Force Secretary said.

Dr. Rice and General Welch foreshadowed major changes in both commands. Said the Chief of Staff, "You will see very significant streamlining within those two commands to eliminate layers of staff and management, so that the individuals who have the resources in hand work as closely as possible with the individuals who need those resources to get the work done. You will see

some startling things happening in this regard over the next three years."

More Technology Than Funding

General Welch had harsh words for the high prices of some modern military technologies, the technologies of sensors in particular, and said that the Air Force "simply cannot afford to continue paying them."

“We have more technology on the shelf than we can afford to field.... We are going to have to find more affordable ways of getting the capabilities we need.”

“We are in a situation that is absolutely unique,” the Chief of Staff declared. “We have more technology on the shelf than we can afford to field. It may be that some of that technology is the wrong answer for reasons other than affordability, but I can tell you one thing—marvelous technology that’s unaffordable will just not interest the Air Force.

“We are not going to pay more and more and more for weapon systems. We are going to have to find more affordable ways of getting the capabilities we need.”

Dr. Rice said that the Department of Defense, as part of its move to do better at reconciling the costs and capabilities of systems in these high-tech, tight-money times, is determined to “put into place a clean, clear, short line of management responsibility and accountability” for the major acquisition programs of all the services.

So far as USAF is concerned, he explained, that line runs from the Under Secretary of Defense for Acquisition to the Assistant Secretary of the Air Force for Acquisition, then to the Program Executive Officers (PEO), each of whom will be “a

kind of general manager responsible for a cluster of major programs,” and finally to the on-the-spot managers of major programs.

“That will be the chain of command, and others along the way will not be authorized to intrude on it,” the Air Force Secretary declared.

He said Air Force Systems Command’s product divisions, such as Aeronautical Systems Division and Space Systems Division, will con-

tinue to manage “all of the myriad programs that are not classified as major.” With respect to those programs, the product division commanders will be accountable to, and will report directly to, the Assistant Secretary of the Air Force for Acquisition, not to the AFSC Commander as in the past, Dr. Rice explained.

Dr. Rice pointed out that the re-vamping of program management lines of authority will leave AFSC headquarters with a narrower role and a lower profile. “Systems Command will be responsible for the oversight, maintenance, and planning of our technology base, of test facilities, and of the engineering and other resources required to support the programs—programs managed within the Command and those in the PEO stream.”

AFSC headquarters will also be “responsible for the Command’s operational functions,” including “its people and bases,” the Air Force Secretary explained. “So,” he summed up, “the Command will become an institution for supporting the [Air Force] tech base and program resources.”

Does this imply a reduction of rank for the AFSC Commander? “I believe we will continue to have a four-star officer there,” Dr. Rice replied.

At the AFA symposium, General Randolph, the four-star officer currently in command of AFSC, agreed that the rising costs of modern technologies and systems must be checked. But he made a point of praising AFSC’s development of those technologies and systems and of underscoring their value to the operational Air Force.

“AFSC has done its part in restoring our nation’s defenses over the past decade,” General Randolph declared.

Not Organizational Problems

He also made it clear that he has low hopes for the hierarchical changes being set in motion for his Command in particular and the acquisition system in general.

“The problems we face in acquisition are not organizational in nature,” the AFSC Commander asserted. “Organizational changes are things that the bureaucracy likes to do and will continue to do, but they will not solve the problems.

“The problems we have are process problems, problems of getting everyone working together and making sure that we define the job at hand, of getting all this debilitating legislation out of the middle of what we’re trying to accomplish.

“We suffer from excessive congressional oversight. We can reorganize until we turn blue, and it won’t solve that. In terms of the acquisition process, you can add attempts at reform to the list of death and taxes as immutable elements of life.

“You may not like it, but budget pressures alone will keep congressional staffs and critics searching for ways to rework what we do.”

Of the move to bring into being Program Executive Officers and give them high rungs on the acquisition ladder, independent of AFSC, General Randolph pointedly declared, “The PEO structure is something that somebody thinks is a good idea. We’ll make it work. But as an improvement, in and of itself, it will be marginal at best.”

He also noted that AFSC is no stranger to change. “We go into the

1990s with a new AFSC. Systems Command today is not the Systems Command of ten years ago. Since 1980, we've seen improvements not only in technologies and systems, but in attitudes and business practices as well."

He listed such AFSC attainments as "a whole new generation of warplanes that use new and demanding technologies," the space recovery program featuring new launchers and satellites, very-high-speed integrated circuits, and "pioneering in low observables with the B-2 bomber and F-117 fighter."

General Randolph acknowledged that AFSC was once widely perceived as "following our own technology interests at the expense of the operational commands' present and future requirements." He claimed that this is no longer the case, and that "customer satisfaction . . . supporting the operational users" is the name of the game at AFSC.

General Randolph warned the Air Force not to turn away from technology just to save money. "We must emphasize the technology base during this period of retrenchment," he declared. "We need to put more money into science and technology than we do now."

AFSC and the NASP

He portrayed AFSC as the "focal point" of the National Aerospace Plane (NASP) program—the vehicle for developing technologies germane to hypersonic aircraft/spacecraft—and gave the command high marks for having stimulated a "renaissance of thought" in the national consciousness with respect to hypersonic flight.

Lt. Gen. Donald J. Kutyna, Commander of Air Force Space Command, expressed the opinion at the AFA symposium that "NASP will have an awful lot of missions."

"I don't see it as a major carrier of space payloads," General Kutyna said. "I see it more for doing those missions where a man is needed in space for some reason, or maybe as an unmanned NASP that is highly responsive, can go into space very quickly, and operate with more flexibility and greater maneuverability than an expendable launch vehicle or the shuttle."

"I believe NASP would give us a

tremendous capability. But the question is whether we can afford it at this time. It looks to me as if its affordability is waning a little bit."

The NASP program also received strong backing at the symposium from another highly influential element of the operational Air Force. Strategic Air Command's high hopes for the program were enunciated by Lt. Gen. Donald O. Aldridge, SAC's Vice Commander in Chief.

"This program offers great potential for SAC and the nation," General Aldridge asserted. "The significant effort being put forth in hypersonic technology by the Europeans, Japanese, and—especially—the Soviets, leads me to conclude that we must continue our own efforts."

He declared, "The success of the NASP program may be the key to US aerospace leadership in the twenty-first century."

General Aldridge said that SAC takes a constructive view of the Defense Management Review and is "dedicated to finding ways to do our job more effectively with less expense."

The SAC Vice CINC said that "in order to maintain deterrence in the face of reduced numbers, aging forces, limitless defenses, and continuing Soviet modernization, the United States must have a modernized force in which every weapon must be a quality weapon."

According to SAC, "that means ICBM mobility . . . and our planned force of penetrating bombers," he declared.

SAC in the Conventional Arena

General Aldridge told the symposium audience that "the conventional arena will play an important role in SAC's future. As the numbers of nuclear weapons are reduced, strong conventional forces will keep the nuclear threshold high."

SAC anticipates involvement in all manner of nonnuclear missions, including "support of maritime operations, antiterrorism, and drug intervention," he said, and emphasized that "all SAC bombers have a conventional capability."

General Aldridge said that nuclear deterrence will continue to be SAC's top job and warned against any moves to deplete the traditional

triad of strategic weapons that has successfully seen to such deterrence "for over thirty years."

He also said that the Defense Department is "working the problem of how to mesh strategic offensive and defensive capabilities into a coherent program for the future." In this endeavor, SAC is "working very closely" with Air Force Space Command, US Space Command, and the Strategic Defense Initiative Organization (SDIO), General Aldridge said.

The Defense Department study of strategic offensive/defensive synergism was undertaken at the suggestion of SDIO, Lt. Gen. George L. Monahan, Jr., SDIO Director, told the AFA symposium attendees.

"In the [Bush] Administration's strategic review, we [SDIO] made one major suggestion, and it was followed," General Monahan said. "We said you need to look at the offense and the defense together, because you can't have one group of people advocating one, and another group the other, competing before Congress for very, very scarce dollars. Our point was that we all have to go to Congress with a solid front."

"And so, for the first time, in that strategic review, we're making the first stab at figuring out how strategic offense and defense work together, and out of it is coming the President's program of strategic modernization that blends offensive and defensive elements."

General Monahan said the biggest obstacle to the deployment of an SDI system is the ABM Treaty of 1972.

"The technology is at hand to proceed toward deployment," he said. "The major issues are not technical. We have a very formidable engineering task that must be accomplished, but no fundamental showstoppers."

"The major issues, from the political and international points of view, have to do with the ABM Treaty. It does not allow us to deploy a strategic defense system. So one of the major things that this Administration has to do over the next few years—and indeed, Congress and everyone else involved—is to sort out what we are going to do about that Treaty. This isn't a unilateral thing. The Soviets and our allies are in it too." ■

This meet's heavy toll on turrets should worry enemy tank crews.

The Guns of Gunsmoke

By Gall Walsh-Phillips

IF THE action at Gunsmoke '89 is any indication—and Air Force officers insist that it is—USAF's ground-attack skills are close to spectacular.

Crews taking part in the latest Gunsmoke, Tactical Air Command's biennial air-to-ground gunnery meet, turned in a series of bombing performances that have been unparalleled in recent years. Consider:

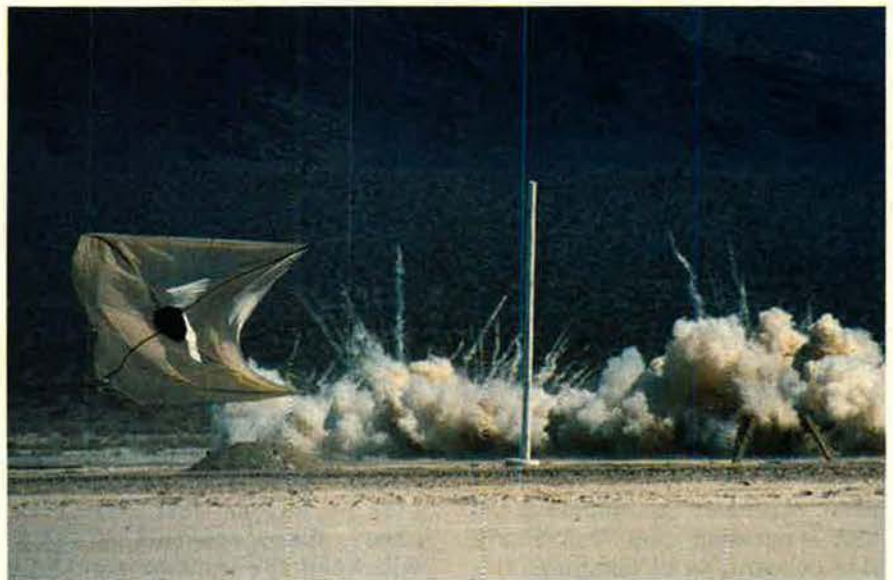
- In one dive-bombing sortie, a contestant hit a tank turret with three of his four bombs.

- In low-level, high-drag bombing, three different crews put seventeen of their twenty-four bombs on a turret.

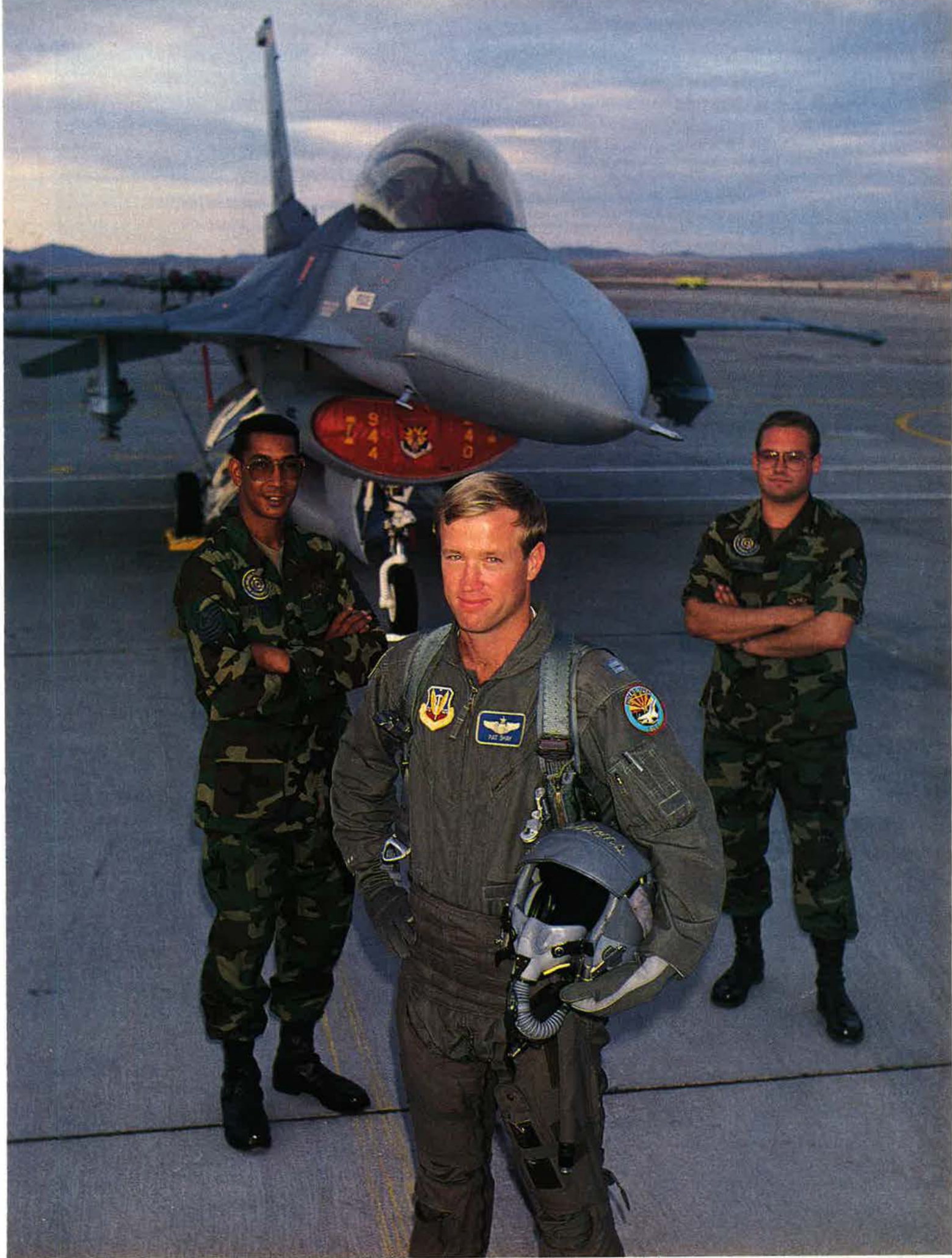
- In level bombing, the top six competitors hit a turret with sixteen of their twenty-four bombs.

- Out of 1,800 possible points that could be scored in the category of navigation-attack, crews scored a total of 1,796.

"The flying was superb," concludes Maj. Gen. Billy G. McCoy, Commander of Tactical Fighter Weapons Center, Nellis AFB, Nev., where Gunsmoke '89 was held last October. "Outstanding."



Above: At Range #63, near Indian Springs, Nev., targets are strafed during the weapons competition of Gunsmoke '89. **At right:** Gunsmoke '89's Top Gun was Capt. Pat Shay of the 944th TFG, Luke AFB, Ariz., shown here with his crew chief, MSgt. Ken Mitchell (left), and assistant crew chief, SSgt. James Kuchelmeister.



Officers say performances by select Gunsmoke crews reflect trends running broadly throughout USAF, where better training and better equipment is being translated into expanded combat power.

The assessment is underscored by Capt. Bob Valin, an F-16 pilot assigned to the 432d Tactical Fighter Wing, Misawa AB, Japan: "Gunsmoke proved we're going to be able to get in at any altitude, find our targets, bomb those targets, and get out . . . before [the enemy] knows what happened to him."

Also impressive were performances turned in by aircraft maintainers. Flying schedules were met 100 percent of the time. There were no aborted flights. Planes flew 466 sorties, two more than planned. USAF, says General McCoy, "could have asked for no better."

Gunsmoke tests the ability of aircrews to put bombs on target. Crews fly three progressively harder bombing missions. In the latest meet, sixteen active-duty, Air National Guard, and Air Force Reserve crews and support teams

competed for two weeks to decide which unit was the best.

"It Wasn't Easy"

Personnel from the 169th Tactical Fighter Group (ANG) from McEntire ANGB, S. C., flying the F-16A, won overall honors. "It wasn't easy," reports Maj. John "Bullet" Bellinger, a pilot with the 157th Squadron of the 169th TFG. "We were 32.5 points behind going into the third (and last) profile, but we have a lot of experience, and what helps us and makes us good is the best maintenance team in the world."

Taking part in the competition were more than 1,000 contestants and eighty planes from Tactical Air Command, US Air Forces in Europe, Pacific Air Forces, Alaskan Air Command, the Air National Guard, and the Air Force Reserve. The contestants included two ANG units flying A-7s; three active, one ANG, and one Reserve unit flying A-10s; one active, one ANG, and one Reserve team flying F-4s; and four active, one ANG, and one Reserve unit flying F-16s.



—USAF photo by A1C Mike Reinhardt

Aircrews were evaluated in basic bomb delivery, tactical bomb delivery, and navigation/attack technique. Each crew had two opportunities to complete its mission in all events. The higher scoring attempt in each event was used to compute final standings.

Maintenance teams were scrutinized for skill in sortie generation and scheduling, as well as aircraft appearance—that is, for cleanliness, painting, placement of decals and markings according to Air Force regulations, and signs of corrosion. Munitions crews competed in the loading of arms—a field where precision, technical expertise, and safety are as important as speed.

Capt. Patrick Shay, a member of the 944th Tactical Fighter Group (AFRES), Luke AFB, Ariz., captured the coveted "Top Gun" award by earning 2,399.5 points out of a possible 2,500.

"It was a tough two weeks," Captain Shay recalls, "and stressful the whole time. I didn't have my eye on the leader board, I just ended up there. It was a great team effort."

While Captain Shay's unit finished second overall, the 944th's aircraft munitions and maintenance teams came out on top in their respective competitions.

Flying Three Profiles

Gunsmoke '89 aircrews concentrated their efforts on basic weapons delivery from a conventional

—USAF photo by A1C Mike Reinhardt



Some 1,000 contestants and eighty planes from TAC, PACAF, USAFE, AAC, ANG, and AFRES participated in Gunsmoke '89. Top right: A-7 aircraft from the 150th TFG, New Mexico ANG, prepare to land at Nellis AFB, Nev. Above: F-16s from the 432d TFW, Misawa AB, Japan, arrive at Nellis, and the crews check in.

box pattern (Profile I), tactical bomb delivery (Profile II), and navigation/attack (Profile III). Teams flew each of these profiles twice during the meet.

Profile I involved two passes each over the target in dive bomb, low-angle low drag, and low-angle high drag with six BDU-33 practice bombs expended per sortie. In addition, low-angle strafe passes were flown, expending 100 rounds per sortie on twenty-five-foot-square cloth panels.

In Profile II, each aircrew completed two passes over the designated target at low-angle low drag, low-angle high drag, and low level, dropping six BDU-33s per sortie. This event was flown from a tactical pop-up pattern. Low-angle strafe passes were flown from a box pattern.

"In Profile II," explains Maj. Patrick Hoy, Gunsmoke '89 Chief of Operations, "the pilot flies much lower than he did in the conventional pattern. He flies around to a preplanned flight, pulls his airplane sharply into a climb, and begins his unmasking from a point down

Category Best Team

(The aircrew team in each category that receives the highest number of total points on Profiles I, II, and III)

Aircraft	Unit
A-7	150th TFG, Kirtland AFB, N. M.
A-10	23d TFW, England AFB, La.
F-4	3d TFW, Clark AB, the Philippines
F-16	169th TFG, McEntire ANGB, S. C.

Category Best Aircrew

(The individual aircrew that receives the highest total number of points on Profiles I, II, and III)

Name	Unit	Aircraft
Col. Thomas Wittman	150th TFG Kirtland AFB, N. M.	A-7
Capt. Michael Mangus	81st TFW RAF Bentwaters, UK	A-10
Capt. Jeff Thompson, Capt. Mark Houtzer	3d TFW Clark AB, the Philippines	F-4
Capt. Patrick Shay	944th TFG Luke AFB, Ariz.	F-16

Arrival Competition

(The team that arrives closest to its scheduled time)

347th TFW, Moody AFB, Ga.



Weapons load specialists from the 169th TFG, McEntire ANGB, S. C., pull the safing pins from their team's F-16s at the end of the runways. In addition to scoring the highest possible overall score to win the meet, the 169th earned the most total points in all three competition profiles, securing the title of best F-16 team.

among the trees or hills where he's hiding. Then he pops up and starts looking for the target, rolls in, and continues his attack just like in the conventional profile."

A low-level navigation route was flown in two-ship formation in Profile III, ending in the delivery of two inert Mk. 82 air-retarded bombs. The navigation route consisted of five scored checkpoints with ground panels defining the "gates" (four turn points and an egress point).

The rules mandated that one aircraft of the flight must pass between the gate panels within a specified time period. To avoid a penalty at the egress point, both aircraft were required to fly through the egress gate. The maximum altitude on all routes was 500 feet above ground level. Both aircraft attacked the same target on the tactical range.

All bombs delivered in all profiles were scored using the Television Optical Scoring System (TOSS). A manual backup scoring system was available.

"TOSS scores the accuracy of the bomb within one foot of the center of the target," Major Hoy explained.

—USAF photo by SSgt. Rose Gruben



MSgt. Roger Patskankck from the 181st TFG, Indiana ANG, checks an F-4's guidance control system. F-4 teams, with one exception, placed low in the competition, but their mission-accuracy ratings were respectable in light of the fact that they were competing against aircraft with much more sophisticated navigation systems.

Close to Perfection

Six of the sixteen teams at Gunsmoke '89 came within 1,000 points of a perfect score (10,000 points) in Profiles I, II, and III and in strafing runs. Mission-accuracy ratings for this group ranged from ninety-one to ninety-three percent. Teams finishing in seventh place through thirteenth place in the contest earned mission-accuracy ratings of eighty-two to ninety percent. Two competitors scored in the mid-7,000 range, and only one fell short of desired results, with a fifty-three percent mission accuracy rating.

In the "Top Team" category, the top five finishers flew F-16s. Aircrews piloting A-7s and A-10s rounded out the top ten. With the exception of one F-4 team, which finished eleventh, units flying that aging aircraft placed at the bottom.

Maj. Craig Collins, an F-4 pilot with the 924th Tactical Fighter Group (AFRES), Bergstrom AFB, Tex., is proud of his team's effort in turning in a seventy-four percent mission-accuracy rating, albeit in fifteenth place.

"We don't have sophisticated navigation systems," Collins explains, "but what it boils down to is basic dead-reckoning navigation—being able to read a map and recognize things on the ground and fly the airspeed to hit the points on time, and we can do that."

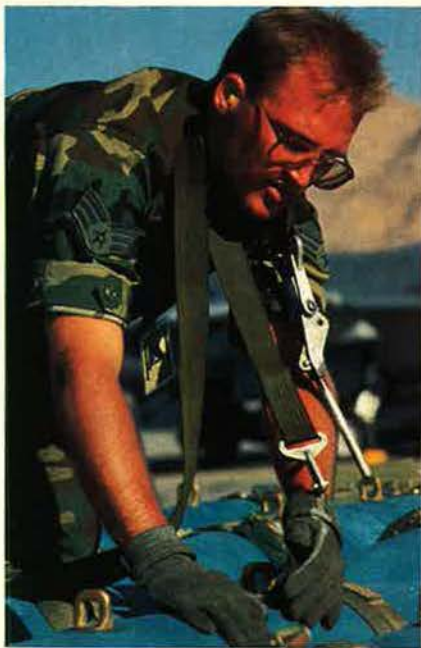
Captain Valin, whose 432d TFW unit finished third overall, also left the competition impressed with the performance of the crews. "We're a force to be reckoned with," he says, "because if we're sent to destroy something, it's going to be done—not in five sorties, but in one."

For six days on the Nellis ramp, Gunsmoke '89 maintenance teams were subjected to the critical eyes of judges for aircraft appearance, maintenance practices, aircraft performance, and military appearance.

"It takes a lot of time and preparation," explained SSgt. Chuck Gray, a crew chief with the 169th TFG, "and sticking with the technical order job-guides checklist. There were a couple of days when I thought I'd have a coronary, but the team stood up real [well] and enthusiasm was high."

The level of expertise of Gunsmoke '89 aircraft maintenance

Gunsmoke '89 Winners		
Award	Winner	Score (Possible points)
Top Team (meet winner)	163th TFG	9,313.5
Top Gun	McEntire ANGB, S. C.	(10,000)
	Capt. Patrick Shay	2,339.5
	944th TFG	(2,500)
Top Crew Chief	Luke AFB, Ariz.	
	SSgt. Joedy Pack	
	944th TFG	
Top Maintenance Team	Luke AFB, Ariz.	5,991
	944th TFG	(6,000)
Top Weapons Load Team	Luke AFB, Ariz.	2,910
	944th TFG	(3,000)
	Luke AFB, Ariz.	
Individual Top Gun Winners		
Event	Winner	Points
Strafe	Capt. Angus Simpson	100
	343d TFW	
	Eielson AFB, Alaska	
Navigation Attack	Capt. Michael France	1,796
	388th TFW	
	Hill AFB, Utah	
Dive Bomb	Lt. Col. Gail Jones	—
	3E8th TFW	
	Hill AFB, Utah	
Low-Angle, Low Drag Bomb	Maj. Lawrence Wells	—
	432d TFW	
	Misawa AB, Japan	
Low-Angle, High Drag Bomb	Maj. Waymond Nutt	—
	169th TFG	
	McEntire ANGB, S. C.	
Low-Level Bomb	Maj. Waymond Nutt	—
	169th TFG	
	McEntire ANGB, S. C.	



Above: SSgt. Michael A. Kenne (left), an F-16 crew chief from the 944th TFW (AFRES), Luke AFB, Ariz., does some Gunsmoke paperwork with pilot Lt. Col. Mike Marshall. **At left:** Sgt. Jeffrey Walter, a weapons specialist from the 432d TFW, Misawa AB, Japan, prepares to load Mk. 82 bombs on one of his team's F-16s.

crews was high, as shown by impressive overall scores. Fourteen of sixteen teams earned from 5,900 to 5,991 points out of a possible 6,000 total. Even the fifteenth and sixteenth teams came within 120 points of a perfect score.

A maximum of 1,000 points was available in each of six maintenance judging days; participating crews achieved perfect scores twenty-nine times.

"These are some of the most outstanding aircraft in the tactical air forces," said Lt. Col. Gerald Brennan, the Gunsmoke Chief Maintenance Judge. "The competition was extremely close, even though some of the aircraft are twenty years old and competing against others as new as a year old.

"It was obvious that these people took a lot of pride in their aircraft and themselves," Colonel Brennan continued, "and it's an important responsibility, because the interior condition can affect the way an aircraft performs."

"The consistency and reliability of the airplanes played a key role in our winning [Top Maintenance

Team]," said Maj. Charlie Savage, aircraft maintenance officer of the 169th TFG. "We had one major problem the second day of the meet—a plane came back with two bombs that didn't release. But, by hook or by crook, we wound up having the best airplanes."

Prepare by the Book

The aircraft combat-servicing competition at Gunsmoke '89 consisted of one scored static load of Mk. 82s and one scored Integrated Combat Turn (ICT) of six Mk. 82s.

"On static load," explained SSgt. William Gibson, member of the 169th TFG "Loadeo" team, "the judge made sure we did the right prep before we hung the weapons. They made sure we followed tech data, and once the weapons were hung, they checked to see that fuze settings on the weapons were correct. We prepared by the book the best we could."

The second phase of the weapons loading competition—the ICT—has been likened to an Indianapolis 500 pit stop.

"The aircraft is returning from a

combat flight," explained Major Hoy, "and the pilot is still in the cockpit. He's getting ready to get rearmed and reloaded with fuel and take it back out and fight some more. So we want to turn the airplane back into flight as quickly as we can."

The rules of operation and safety were stringent. "We had specific areas we could and could not go under the aircraft," said SSgt. Joseph Readyhough, a weapons loader with the 924th TFG, "specific ways we can handle munitions, and if you didn't follow tech data [the judges] wrote you up. A ground safety [rule] that wasn't followed could cost you 250 points and knock you right out of the competition."

The 944th TFG won the aircraft munitions competition, earning 2,910 points out of a possible 3,000 total for both the static and ICT loads. Eight teams scored between 2,680 and 2,830; four finished with 2,510 to 2,560 points; and three competitors earned from 1,840 to 2,410 points.

"I think Gunsmoke has proven some things," said Major Hoy. "We have the best in the world in terms of aircrews and maintenance personnel. We can fly them faster and better, and that's what Gunsmoke has shown." ■

Gail Walsh-Phillips is a free-lance writer living in Austin, Tex. Her most recent contribution to AIR FORCE Magazine was "Photo Finish" in the December 1988 issue.

The Labor Department is preparing to give military veterans more help in the job market.

The Veterans' Man at Labor

WITH defense spending headed down, it is now abundantly clear that US armed forces are about to begin shrinking in force structure and in number of active-duty personnel. Experts maintain that end strength, pegged today at 2.1 million airmen, soldiers, sailors, and Marines, could be cut by 250,000 over five years.

This means that large numbers of skilled, technically trained, and highly experienced servicemen and servicewomen will soon be entering the civilian job market. The federal government is devising programs to ease this transition. Assistant Secretary of Labor for Veterans Employment Tom Collins, a former USAF F-4 pilot with Vietnam service, outlined the veteran's problems and prospects in this recent talk with AIR FORCE Magazine.

Q: Mr. Collins, what is your role in assisting veterans and those who will be separating from the armed forces in the near future?

A: I am the principal advisor to the Secretary of Labor on veterans' employment matters. I am also chief of the agency that runs a national veterans' employment ser-

vice system. We have a national office, ten regional offices around the country, and an office in each state. We provide employment services to veterans through local employment offices under each state's employment system.

Q: Over the next several years, there will be a fairly substantial reduction in the size of US military force, and quite a few servicemen and -women will be seeking work in the civilian economy. What kind of situation lies ahead for the average veteran? Will it be difficult to find work?

A: It will be difficult in the sense that many of the new veterans will be relocating. That sometimes presents an initial barrier to employment.

However, there is good news. The Department of Labor has done a study, "Workforce 2000," which concludes that there will be a labor shortage in this country in the next ten years.

Q: A shortage in what sense?

A: There will be service-oriented jobs requiring a higher level of skill than is available in the work force of today.

So although there will be a worker shortage, it is additionally important to note that the jobs that US employers will be looking to fill will actually require higher degrees of skill than are generally available in our work force now. It's the requirements of high technology.

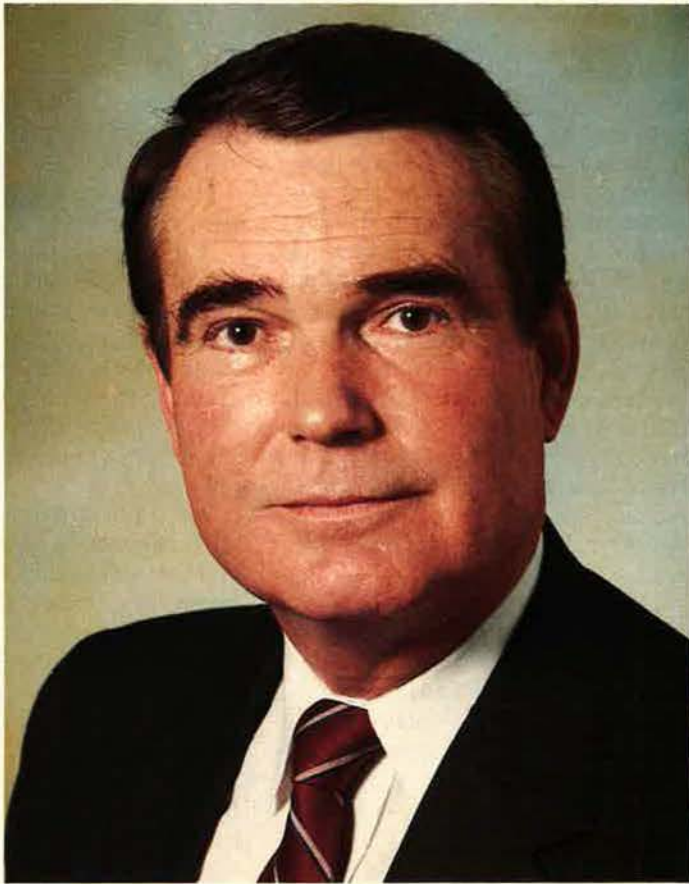
It is a situation that presents opportunities for service members today who will become veterans in the future. This agency is focusing on this group and preparing to help them take advantage of the opportunities.

Q: What are you doing, specifically?

A: We are concentrating on the military-to-civilian transition. We have a program that is relatively new and in the pilot testing stages now. It's called the Transition Assistance Program.

Department of Labor personnel, in cooperation with the Department of Defense and Department of Veterans Affairs, are now carrying out the program. We will be going to military bases to offer employment assistance and training through a three-day workshop program.

Attendance would be voluntary.



Assistant Secretary of Labor for Veterans Employment Tom Collins advises the Secretary of Labor on veterans' employment and directs a national veterans' employment service.

The soon-to-be-discharged serviceman or -woman can enroll in the employment systems program around ninety days before discharge.

That is very important. Often, a serviceman is discharged and winds up out of the service with no planning for his next job. That tends to lead to long-range employment problems. We would like to eliminate much of that difficulty. Most of our work has been spent solving veterans' problems that never should have existed in the first place.

Q: Is this program under way?

A: It is projected to start in April 1990 at one site per military service. Those sites are being selected now.

Q: What will come out of this project?

A: The plan calls for expanding the program, over the next year, to provide transition assistance programs on each military installation. It will become part of the discharge process. The service will be made available throughout the country.

Q: What about at overseas bases?

A: They will be included. The plan is to expand the system to in-

clude servicemen overseas, who, for the most part, will not be discharged overseas but will be returned to the United States and discharged in a very short period of time, not allowing any opportunity for employment planning.

Q: Is it your belief that the Administration and Congress are prepared to fully fund such a program?

A: Yes. The really fortunate aspect of the Transition Assistance Program is that we are not requiring a substantial amount of funding. Most of the costs will be covered by a simple rechanneling of our resources. However, some additional funds will be required.

Existing programs that we have evaluated have demonstrated that there is a real need for this program.

That is why we are proceeding with great enthusiasm and optimism.

We are interested in making it available because we find that in later years, when a veteran comes to our services needing assistance, his problem started at the time he left service.

Q: Do you mean, for example, a soldier at Fort Bragg might leave the service and just take any available job, only to find out later that he's in a dead-end position?

A: That is one typical situation, yes.

Q: What do you provide in "Transition Assistance?"

A: First, we give job-market information. In fact, we are developing a civilian occupational labor-market information system, which will be a national computerized system. It will be available at each one of these sites or at each base. That will first of all provide labor-market information, where the jobs are.

Then, actual training will prepare the individual for what it is like out there in the job market—how to present himself or herself, how to write résumés, how to conduct interviews.

Finally, he or she will be referred directly to employment placement specialists, either in the local area or to the part of the country to which the individual plans to relocate.

Q: How would a veteran make contact with the system?

A: There are two different terms used for employment offices where veterans might make contact, and it varies from state to state. Some are called job service offices, and in other states they are called employment offices.

Q: Is there one in every major city?

A: Yes. In major cities there would be several, as many as six. A town of even 20,000 or 30,000 would probably have a state employment office. We will have a veterans' employment representative in that office.

Q: Are there any other Labor Department services?

A: In the sense of helping ease the transition, no. Most of our work right now is aimed at helping longtime veterans who have experienced barriers to employment or other difficulties.

Q: In general, how are veterans doing?

A: We find that veterans are faring very well in the national job market today. In fact, the veteran unemployment rate is below the national average.

However, we find that there are pockets of severe problems among veterans. This includes disabled veterans and some Vietnam-era veterans who are having extreme difficulties.

We are also observing that the senior career military people are having unusual difficulty in making the transition to the right kind of job and to a good job that they deserve and should expect in the civilian job market.

There are differences, depending on age, training, and skills learned in the military. That's part of our Transition Assistance Program. We help to translate military skills into civilian terminology. That is very important. It is probably even more important for the more senior grade, both enlisted and officer.

Q: Why is that?

A: It is a communication problem. Private industry has difficulty translating some experience and technical skills to company needs. If the person "grew up" in the military service and developed substantial education and management skills, private industry may find it difficult to make a comparison of that person with someone who grew up in their own company.

Q: So senior officers, colonel and above, face difficulties?

A: Yes. We have observed that that is an area of great difficulty.

Q: Where do you think the job-hunting will be best?

A: Traditionally the defense industries have looked to veterans as prospective employees, so a lot of veterans have obtained higher skilled jobs in the defense industries. But one can speculate that, if there is going to be a reduction in military personnel, there will perhaps also be fewer defense jobs.

Q: Are there specific industries or service sectors that you would say are more attractive?

A: The economy is orienting more and more toward services. That means computer services. It means traditional service industries, like the hotel, travel, and tour-

ism business. The veteran needs to broaden his perspective.

We work very closely with employers and employer groups throughout the country, promoting employment of veterans. So we are looking for employers who have not traditionally hired veterans or who have not had veterans identified, as they really should be, as very high quality workers. We find that when we open the doors for veterans, employers are very satisfied.

In fact, some private companies guard it as a company secret: "We have discovered something, that it pays to hire veterans." They don't advertise it.

Q: Why do these companies like veterans?

A: In general, the person who has had military service is well-disciplined, tough-minded, dependable, loyal, and all those things that most employers want. But they find it difficult in the initial employment stage to sort all that out.

It's a major part of our job simply to market our veterans.

Q: I presume that applies to women as much as to men?

A: Very much. I have not mentioned women veterans as a special group. In fact, it is perhaps best if women not be identified as a special group. That has its disadvantages. We are concerned about the growing number of women veterans. Their military skills are high-tech in many areas.

Q: Do they have any special problem that men do not have in making the transition?

A: They do have certain problems. As we all know, women in general tend to find it difficult to receive recognition of their skills in nontraditional areas.

Q: What about minority-group veterans?

A: Minorities are experiencing far worse employment rates than the average veteran. We are very concerned about that. We have by policy focused on minority veterans, and they are included on a priority basis in all of our programs and all of our services.

Q: What about the best geographic areas? Can you make an assessment there?

A: In recent years there has been a revival in the northeast, meaning the jobs are plentiful there.

Q: New York, Boston, Providence, places like that?

A: Yes. That is fairly common knowledge, whereas some other areas of the country have a tough job market.

Q: Will it be tough to get veterans where the jobs are?

A: People needing jobs frequently are located in an area where the economy does not provide jobs, which suggests that the job-seeker should be a little more willing to move. That is seen by some as a particular problem for minorities. They simply aren't living where the jobs are.

We have observed, especially with respect to one-term service members, that they tend to go back home. They expect and want to find their job at home. We will never tell them that they should not have that as their ideal or their dream. But often that does not make economic sense.

I don't want to discourage anybody from going home. You should first set your goals on where you want to go but then make a fair assessment of what the opportunities are there—then make your decision. We want to give the returning serviceman the information and the facts and then let him make his own move.

Q: What about compensation? Should the veteran expect less pay, more, or about the same as in the service?

A: In my opinion, the serviceman should have a goal of not taking a reduction in standard of living. At the least, expect the same compensation package, and then go for an increase.

On the other hand, we find that many servicemen have higher expectations of their future in the civilian job force than is realistic. This tends to be true at all grades, from the one-termer to the career officer.

Q: What accounts for the high expectations?

A: Our military people mingle with civilians. The grass is always greener on the other side of the fence. Everyone knows a guy down the street who seems to make a fantastic salary.

Q: So veterans, before they go out looking for a job, ought to take some reality therapy about what it's really like?

A: Yes, and that keeps going back to our plan for the Transition Assistance Program. Perhaps the primary function of the program is to bring that person to reality. He can then make his decisions based upon factual information.

Q: What's the biggest single mistake that military members make when they start looking for a civilian job?

A: There is a lack of prior planning. They think that there are plenty of jobs that are higher paying. It's an attitude of, "I've got plenty of time, so I'm going to have a vacation, relax, and when I'm ready I'll get a good job."

There's no planning. That is where most run into difficulty.

Q: When someone knows he is going to separate, how much time should he allot for preparing to make the transition?

A: At least ninety days. It takes at least ninety days to pull the last-minute facts together to do the work necessary to make the transition properly. I am talking about preparing for job interviews, making job searches, and preparing résumés. It takes approximately ninety days to do the job searching and simply to do the paperwork necessary.

Q: So that is a minimum, but it would be preferable to start before then.

A: Oh yes, certainly.

Q: So for the average person out there who's about to be either voluntarily or forcibly separated from the service, the key things are to start early, be realistic, figure out what his strengths are, communicate them well, and be willing to make some sacrifices, such as relocation, in order to find the best possible position.

A: Yes. That's a good summary. I would add that they should take advantage of the services we provide. Certainly, if there should be a dramatic reduction in force, we will put more emphasis on transition assistance. Where the rubber meets the road is at the local employment offices in each population center in the state. These offices have local veterans employment representatives and disabled-veterans outreach-program specialists who are designated to serve disabled veterans. They need to be in touch with this system. ■

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A I R L I N E S

It began as a small computer code for the B-1 bomber. Now everybody's using it to design everything from cars to beer cans.

Look at What DYNA Does

By Steve Wampler

NO ONE expected such big things from this computer code. Written in 1976, DYNA3D was a small, 5,000-line program. Lawrence Livermore National Laboratory created it solely to help supercomputers analyze the structures of bombs dropped by B-1 aircraft.

Then the unexpected happened. The code began to spread, seeping outward from LLNL into the supercomputers used by many private companies. It grew longer, flashier, faster, more versatile.

Now, after fourteen years, an astonishing result can be seen. DYNA3D has become a 54,000-line workhorse for industry. Hundreds of supercomputers use it to design everything from safer autos and stronger engines to better beer cans.

Its 300 users include eighteen aerospace companies, nine atomic energy firms, thirteen auto makers, thirty-seven research labs, and twenty-five engineering corporations. The user list is a "Who's Who" of global industry: Mercedes-Benz, General Motors, Alcoa, and General Electric are but a few of its devotees.

It is well known that US defense needs spawned numerous innovations valuable to the US civilian economy. DYNA3D suggests that defense R&D can continue to play a critical economic role in the information age. It is a textbook case in how purely military research can eventually have a wide impact.

LLNL, a Department of Energy laboratory run by the University of California, passes along many taxpayer-funded technologies. Gordon Longerbeam, head of Technology Transfer Initiatives, calls DYNA3D one of "the very best examples" of this process.

What is it?

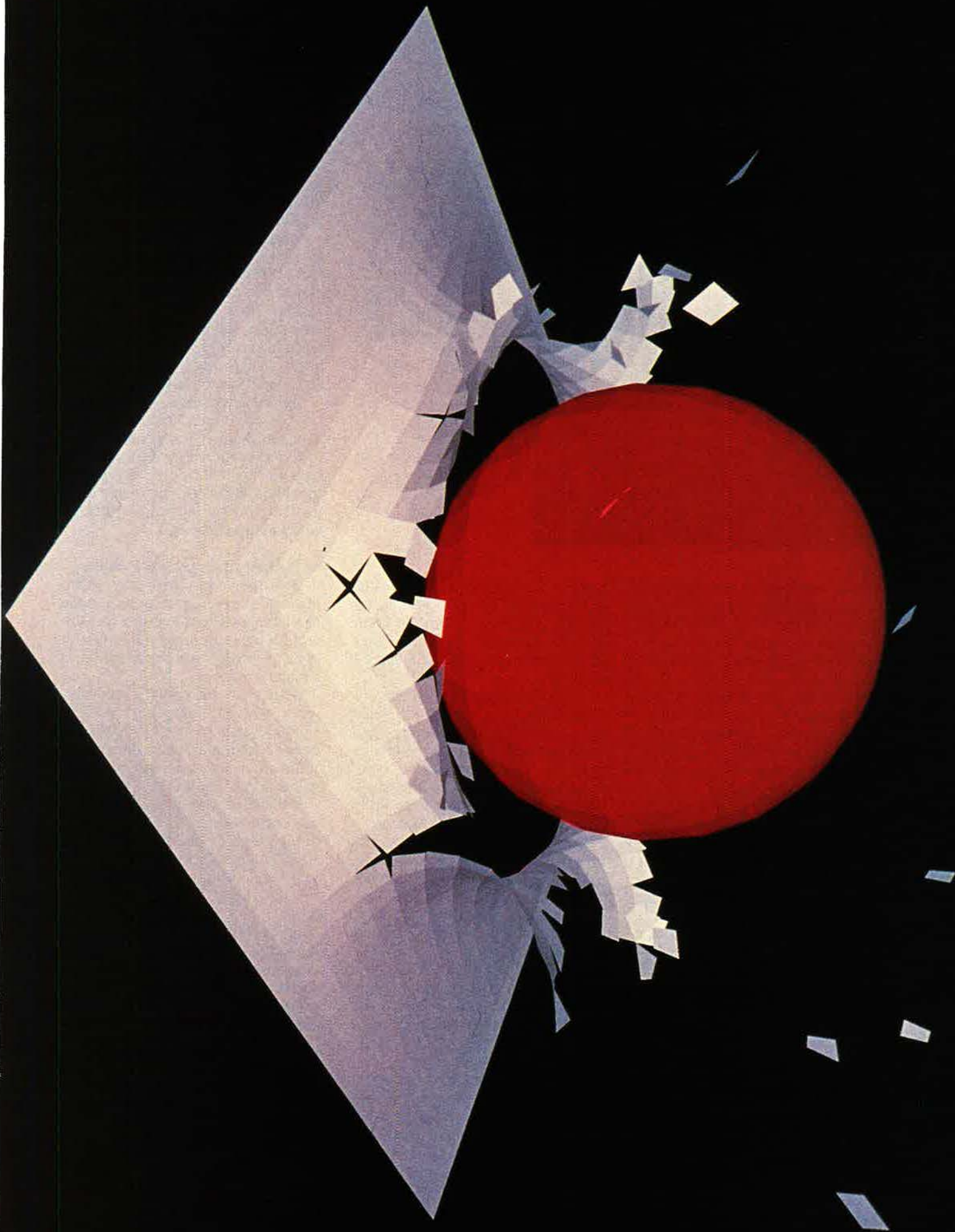
Computer code is an ordered list, or lists, of successive instructions that will induce a computer to conduct certain types of operations. DYNA3D and codes like it—the so-called "three-dimensional codes"—permit supercomputers to analyze structures in all three spatial dimensions.

Simulated Stress

Researchers using such computers are "shown" what happens to components as the forces of stress



In a series of three-dimensional, computer-generated images created with DYNA3D, a rigid ball breaks through a steel plate. The structural analysis program can simulate any kind of metal stress, from pressure to impact to chemical blast.





DYNA3D uses some 100,000 equations to simulate a car crash. Running a crash takes fifteen to twenty hours on a Cray X-MP-42 supercomputer. Its successor, the Cray Y-MP pictured here, will be used to model crash effects on vehicles and their occupants at the same time.

move through them. They can simulate anything that can be done to metal with hammer, forge, or torch. They analyze thermal stress, internal or external pressure, and acceleration loads as they occur.

The benefits are obvious. Companies can save millions of dollars and thousands of man-hours by designing products with computers, reducing the need for expensive test hardware. It takes months to build, test, and interpret data in a nuclear weapons experiment, but the computer can run such a test in a few days. The three-dimensional computer image allows engineers to "correct" flawed designs and test new configurations right away.

"The most important thing about DYNA3D and codes like it," says Mr. Longerbeam, "is the way systems can be modeled before they're built. You're investing your design time in computing rather than in physical testing, which is much more expensive."

For many organizations, codes like DYNA3D are starting to revolutionize engineering design, a potential that became apparent not long after DYNA3D was created.

In 1979, shortly after the code was created, the Army's Ballistic

Missile Command in Huntsville, Ala., provided funds to modify the code so that the Command could examine the effects of kinetic-energy weapon fragments hitting missile warheads.

Not long after, the Defense Nuclear Agency got into the act. At the request of DNA, the code was again modified, this time to provide a capability for computers to study what would happen to the structures of missiles if they were hit by directed-energy weapon beams.

In another early application, a defense contractor working for USAF modified and operated the computer code in a test of the effectiveness of a system designed to protect intercontinental ballistic missiles against terrorists.

In time, DYNA3D began to find its way to supercomputers operated by civilian companies. One of the earliest industries to latch on to DYNA3D was that which services nuclear power facilities.

San Diego-based General Atomics has run the code to design nuclear-waste shipping containers. To meet federal requirements, the transportation containers must withstand four tests with only minor leaks. The tests include a thirty-foot

drop; a forty-inch drop onto a solid, six-inch-diameter, steel cylinder; thirty minutes in an oil fire or gas fire; and twenty-four hours submerged in water.

"The use of DYNA3D has allowed us to initially design these containers by analysis rather than by tests," says Chuck Charman, Manager of Structural Mechanics for General Atomics.

Ontario Hydro, the public utility for that Canadian province, has applied DYNA3D to analyze shipping containers for radioactive material. Marty Gavin, a design engineer/specialist, says DYNA3D saved Ontario Hydro six months when the utility sought licensing for its tritiated heavy-water casks.

"Because you have DYNA3D and you've conducted the analysis," says Mr. Gavin, "you're about ninety-five percent sure you're going to pass the test. If you didn't have a tool like DYNA3D, you would have less certainty of passing the test, or you would overdesign."

In Pursuit of Crashworthiness

Over the years, automobile manufacturers have embraced the code in a big way. From Porsche to General Motors, auto makers in pursuit of safer designs use the program to simulate crashes.

Nearly all automobile manufacturers who run computer codes to simulate crashes use DYNA3D or codes based on it, according to Jim Johnson, a senior development engineer with General Motors.

DYNA3D shows the effects of a car crash through the use of computer graphics and approximately 100,000 equations. The whole process takes fifteen to twenty hours to run on a Cray X-MP-24 supercomputer.

Greg Clifford, Manager of Cray Research's Structural Applications Group, says that his company has seen "a tremendous amount of interest in DYNA3D," particularly in the automotive crash analysis industry.

GM's Johnson predicts that, within five years, DYNA3D will be used to model the effects of crashes on structures and on vehicle occupants at the same time, as well as crashes involving vehicle occupants protected by air bags.

The use of computer codes like DYNA3D to study crashes is a rela-

tively new development in the automotive industry, which previously relied almost exclusively on physical crash tests to study the safety of car designs. While actual crash tests, which cost from \$50,000 to \$750,000, are still widely used, there has been a trend toward performing analysis by computer simulation.

General Motors has used DYNA3D over the past two years to study the crash behavior of several cars. GM has mainly studied front-end crashes with DYNA3D, although rear-end crash and side crash analyses are under way, Mr. Johnson says.

DYNA3D's use for automotive crash analysis also extends beyond US borders. Other companies running the program are Saab of Sweden, Suzuki of Japan, and the German giants—Porsche, Mercedes-Benz, and Volkswagen.

Larsgunnar Nilsson, Manager of Saab's Technical Analysis Department for cars, calls DYNA3D the best three-dimensional code he has seen.

Saab, a company that has long product cycles, has designed one automobile with the assistance of DYNA3D—the Saab 9000—since it began running the code in 1984. Mr. Nilsson predicts that DYNA3D will first complement test car crashes and then largely replace those tests.

Porsche has used DYNA3D since 1986 to help design its cars. Mercedes-Benz and Volkswagen have run the code since 1987, says mechanical engineer Karl Schweizerhof. His engineering company, Munich-based Cadfem, supports and maintains DYNA3D at the three West German automotive companies.

Another German auto maker, BMW, is testing DYNA3D for possible use in automotive design.

Aerospace Applications

In recent years, the aerospace industry has begun to use the code in important ways. For example, aerospace companies use DYNA3D for safety studies to determine the effects of birdstrikes on windshields or engine nacelles.

Cincinnati-based GE Aircraft Engines, one of the world's leading producer of aircraft gas turbines, is

starting to study the design of its jet engine fan blades with DYNA3D, reports Ambrose Hauser, manager of preliminary design.

Fan blades are thickened to protect against hailstones and against ice and tire-tread ingestion, but the added ruggedness cuts into performance, Mr. Hauser says. "We're trying to use DYNA3D to help us design a fan blade with ruggedness and improved performance. I think with DYNA3D we'll be able to come up with some better answers."

GE Aircraft Engines is also planning to use the computer code to evaluate its containment structures that ensure that damaged blades will not penetrate the airplane's engine casing, Mr. Hauser says. Jet engine manufacturers are required to perform these tests by the Federal Aviation Administration.

S-Cubed, a division of Maxwell Labs in San Diego, runs DYNA3D to model the deformation of diodes in pulsed power machines, says staff scientist Hylton Murphy. When high currents flow through pulsed power machines, diodes are subject to high magnetic stress and can deform or blow apart, depending on

the current, Dr. Murphy says. S-Cubed has used DYNA3D for about a year. "It's an amazing code," says Dr. Murphy.

Other civilian manufacturers are now finding unusual uses for the code. Alcoa runs DYNA3D on supercomputers to better understand how to manufacture aluminum cans that don't dent during production. Alcoa then passes on this technical information to customers who make cans out of its aluminum.

Alcoa staff engineer Bob Dick says that his company is using DYNA3D in the way many automobile manufacturers are running it: for crashworthiness testing. The goal is to develop an aluminum automobile that would have a lighter weight and therefore would provide fuel savings. Under study for about four years, the aluminum car proposal is being considered with a major car maker.

Building a Better Beer Can

For the past two years, engineers at the Adolph Coors Co. brewery in Golden, Colo., have relied on DYNA3D to examine damage to aluminum cans on the company's high-speed production lines.

Shortcuts and Savings with Code

Saving millions of dollars and years of time, DYNA3D has proven to be a valuable workhorse for the Laboratory's Nuclear Weapons Program and, along with other computer codes, has helped revolutionize the process of structurally designing nuclear weapons.

That's the assessment of Al Harral, who heads the Weapons Engineering Division's Advanced Engineering Analysis Group. The code has "allowed us to make almost every structural test a proof test," Dr. Harral explains. "Twenty years ago, we would produce a design and test it, and if there was a structural failure, we'd redesign and retest it."

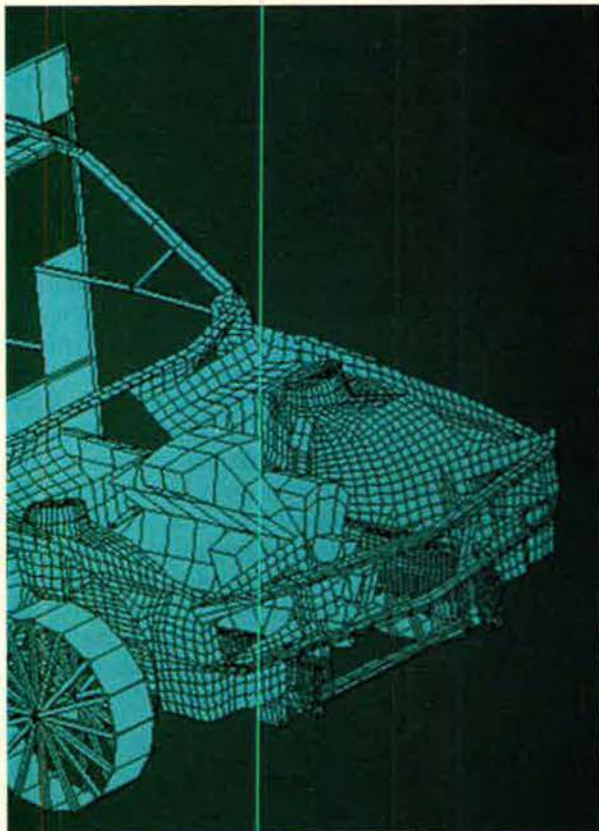
Today, much of the preliminary weapons design work and analysis is performed without tests by using computer codes. Dr. Harral notes that "if our analysis indicates a deficiency, we improve the design until the analysis shows we have a structurally sound design." He notes, however, that tests still need to be performed to assess the structural design of nuclear devices.

Use of the code has produced concrete savings. Dr. Harral cites as an example the case of the Earth Penetrator Weapon, a new type of nuclear warhead. Full-scale structural tests of the EPW would cost \$500,000 to \$1,000,000 apiece. In contrast, the simulated test requires only \$5,000 worth of computer time on a Cray supercomputer. Dr. Harral points out that DYNA3D is used only to analyze the structural and mechanical properties of a weapon, not its nuclear performance.

DYNA3D is also used by the Chemical Sciences Division to study potential insensitive high-explosive accident environments for nuclear weapons to see if there are any extreme conditions under which the explosives will detonate, even in a low-level explosion.

"The entire package that John Hallquist [the developer of DYNA3D] has produced allows a researcher to study problems from the initial blueprints all the way to a final graphical picture," says chemist Craig Tarver.

In B Division, physicist Dave Schneider uses DYNA3D to calculate the effects and formation of projectiles that fly above and then shoot down at tanks. "The code's been very helpful," he says. "Without it, our design work would have been impossible."



Simulated auto crash tests are cheaper than physical crash tests (which cost \$50,000 to \$750,000 each) and provide more data (individual components hidden from observers or cameras during an actual crash can be studied during a simulated crash).

"We need to know how fast we can run our machines without damaging our cans," says Rudy Verderber, a Coors research and development engineer. "DYNA3D has aided us in understanding where damage is occurring on our lines."

Coors recently modified its production lines when analysis with DYNA3D showed that the move would eliminate can damage, Mr. Verderber says. The company is also using DYNA3D to try to design a new can made of less aluminum and more resistant to denting. A thinner can would substantially reduce manufacturing expenses.

Even among defense contractors, the DYNA3D code has continued to serve an important purpose.

General Atomics, for example, has applied it to test whether silos for the Peacekeeper missile are hard enough to withstand attack. This study was performed for the Air Force Ballistic Missile Office.

Another application of DYNA3D by General Atomics has been in demilitarization of chemical weapons. DYNA3D has been applied to

ensure that containment structures would hold any blasts in the unlikely event of an explosion, Mr. Charmar says.

Researchers at Lockheed Missiles and Space Co.'s Missile Systems Division have run DYNA3D for about four and a half years, says engineer Jim Day. Lockheed has used the code to study the effects of weapons hitting such targets as multiple layers of concrete for a command post or steel plates like a ship hull, Dr. Day explains.

At Lockheed Missiles and Space, the code has also been run to analyze insensitive conventional explosives and how missile payloads and missiles react to X-ray and blast environments, according to Dr. Day. "DYNA3D has worked out very well for us. The correlation between our analysis and test data has been quite good. We've found we get more information from our DYNA3D analysis than we do from our tests."

FMC Corp. has used the popular computer code to evaluate whether munitions systems are safe, says

Wing Cheng, a senior member of the company's technical staff. As an example, it has studied whether the detonation of one warhead in storage would set off other nearby warheads. Says Dr. Cheng: "I think the code is very good for this type of application. We are trying to validate it with test results. The correlation works very well, and that gives us even more confidence to use it."

Lawrence Livermore researchers emphasize that code development is the result of the continuing interaction between the Laboratory and code-users in private industry.

One advantage of DYNA3D's widespread distribution is that the Livermore technicians have received many code advances from the companies themselves. General Motors's computer scientists, for example, arranged portions of the code so that similar operations were processed simultaneously, not individually. The GM advance, which was published and passed on to LLNL, saves twenty to sixty percent of the computer time needed for a DYNA3D run.

Another bonus for the Laboratory is that the code's users discover and report the "bugs" they find in the massive software package. Says DYNA3D's inventor, John Hallquist: "At least ninety percent of the errors in the code have been found by outside companies."

Today, it is becoming clear that the spread of DYNA3D is just beginning. Businesses and industries do not only design their products with DYNA3D; at least five computer software companies, including Control Data Corp. and MacNeal-Schwendler Corp., sell their own versions of DYNA3D along with commercial support.

In 1988, Control Data released a new Crash Analysis package that includes DYNA3D and two other LLNL computer codes, while MacNeal-Schwendler, one of the nation's largest engineering software companies, put its MSC/DYNA product on the market in recent months.

DYNA3D even has its own international conference. For the past two years, more than eighty users from the United States and Europe have gathered in London to discuss how the code can be better used to solve engineering problems. ■

Steve Wampler, an employee of Lawrence Livermore National Laboratory in Livermore, Calif., recently spent eight months researching the course of DYNA3D. This article, his first for AIR FORCE Magazine, is based on that research.

For three decades, America's
ICBM program has been right on target
because someone keeps saying,
"Let's reach a little higher."





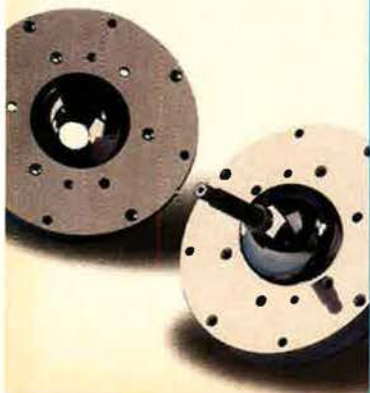
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Mid 50's
G6 gas spin bearing gyro rotor.



Early 60's
Minuteman I inertial guidance system.



Late 60's
F-111D navigation set and attack radar.

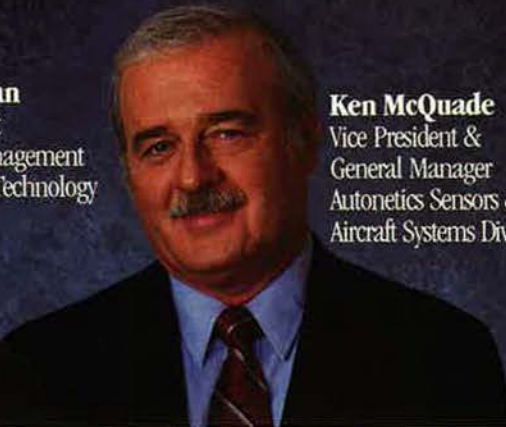


Mid 70's
Laser seeker development sets stage for HELLFIRE.





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Tom Gunckel
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Washington: Autonetics has been contributing a variety of technologies to the national defense for a very, very long period of time.

McLucky: Starting with programs as far back as the mid-50's, teamwork and pride in quality workmanship have been driving the organization's progress.

Gunckel: In the guidance area, you can see the steady evolution of state-of-the-art technology to meet customer requirements with equipment that's smaller, lighter, more reliable and much less expensive than the prior generation.

McQuade: And there's been similar progress in the areas of processing and software.

Washington: For example in data multiplexing activities for the Navy, our system is in effect a Local Area Network. We have to interface with all the major weapon systems, command and control media and displays on board ship.

McLucky: We've also built upon our knowledge of avionics and avionics system integration by applying research and development monies towards

solving the customer's future needs in the areas of terrain following and obstacle avoidance.

Duncan: That's a characteristic of what we do. We take on these challenges to develop new products, in anticipation of the market.

McQuade: That's the case with a lot of the technology that applies to SDI. We see derivatives being very important to the tactical world. Miniature sensors. Miniature seekers. We are doing front-end work in support of both of those.

Duncan: The same can be said for our investment in IR technology, where today we're being approached by every major weapon-system supplier that uses electro-optic devices.

McLucky: We've become one of the two preeminent suppliers of focal planes in the United States. We've won major producibility contracts that will allow us to get the cost per pixel down, which is a necessary prerequisite to sell and incorporate focal planes into numerous tactical weapons.

Smith: But success takes more than

technology. We're also committed to employee involvement, communication and continuous improvement.

Gunckel: We've always been willing to adapt and change to meet the changing requirements of the customer. Both in terms of technology, and the way we do business. This approach allows us to focus not just on the lowest cost, but on the most cost-effective solution — the best-value solution.

Smith: Our customers see it. They've said that of all the businesses they work with, we're one of the best hands-on examples of real Total Quality Management at work.

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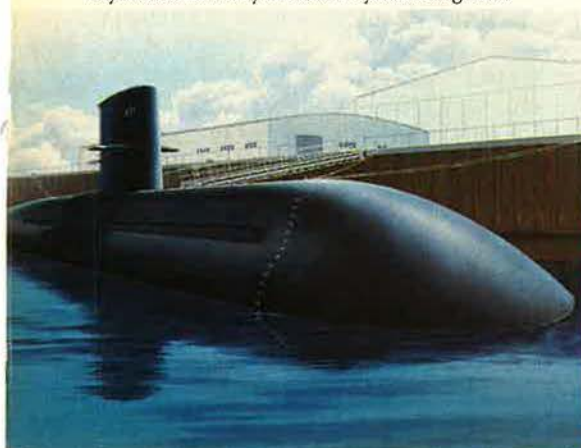


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Mid 80's

Royal Australian Navy Submarine systems integration.



Late 80's

Peacekeeper Rail Garrison launch control system.



Mid 90's

Advanced sensor technology.



The Los Angeles Ball honors the anniversary of the lunar landing and raises money for SCAMP scholarships.

Remembering Apollo 11

By James A. McDonnell, Jr.

AFA's 1989 Air Force Ball, held in Los Angeles in late October 1989, paid special tribute to the twentieth anniversary of the first manned landing on the moon. On hand at the black-tie fund-raiser was the pilot of the Apollo 11 lunar module and the second man to step on the moon, retired Air Force Col. Buzz Aldrin, Ph.D.

The master of ceremonies for the charity event, which each year raises thousands of dollars for SCAMP (Scholarships for Children of American Military Personnel) and the AFA Aerospace Education Foundation, was actor Robert Stack. Charlton Heston, in concert with SCAMP President and AFA Board Member Ed Stearn, presented SCAMP scholarships to four of the eight 1989 recipients. Also on hand were the Ball's Honorary Chairman, entertainer "Tennessee" Ernie Ford, and the General Chairman, Rockwell International Chairman of the Board and CEO Donald R. Beall.

In videotaped comments, President George Bush saluted the Air Force Association for this charity effort and urged the SCAMP recipients to use their education to make their own contributions to the nation.

Mr. Heston noted that SCAMP began in 1972 as an effort to provide scholarship assistance to the children of Vietnam POWs and MIAs. In 1978 the range was extended to include children of those killed, missing, or made prisoners while implementing national policy objectives in such places as Grenada, El Salvador, and Beirut. "Now," he said, "on the twentieth anniversary of Americans landing on the moon, SCAMP proudly announces that its scholarship grant program has been broadened to include the children of all men and women who have given . . . their lives—whether on land, sea, air, or in space—as part of our nation's human adventure linking us to the stars."

To date, eighty-two young Americans have received 233 grants from SCAMP. Initial grants (since 1988) are \$3,500 each, and renewals (until graduation if recipients are academically eligible) are \$2,500 each year. Sixteen ongoing awards are currently being made to past recipients. The SCAMP Board of Trustees, which screens applicants, is headed by retired Sen. Barry M. Goldwater.



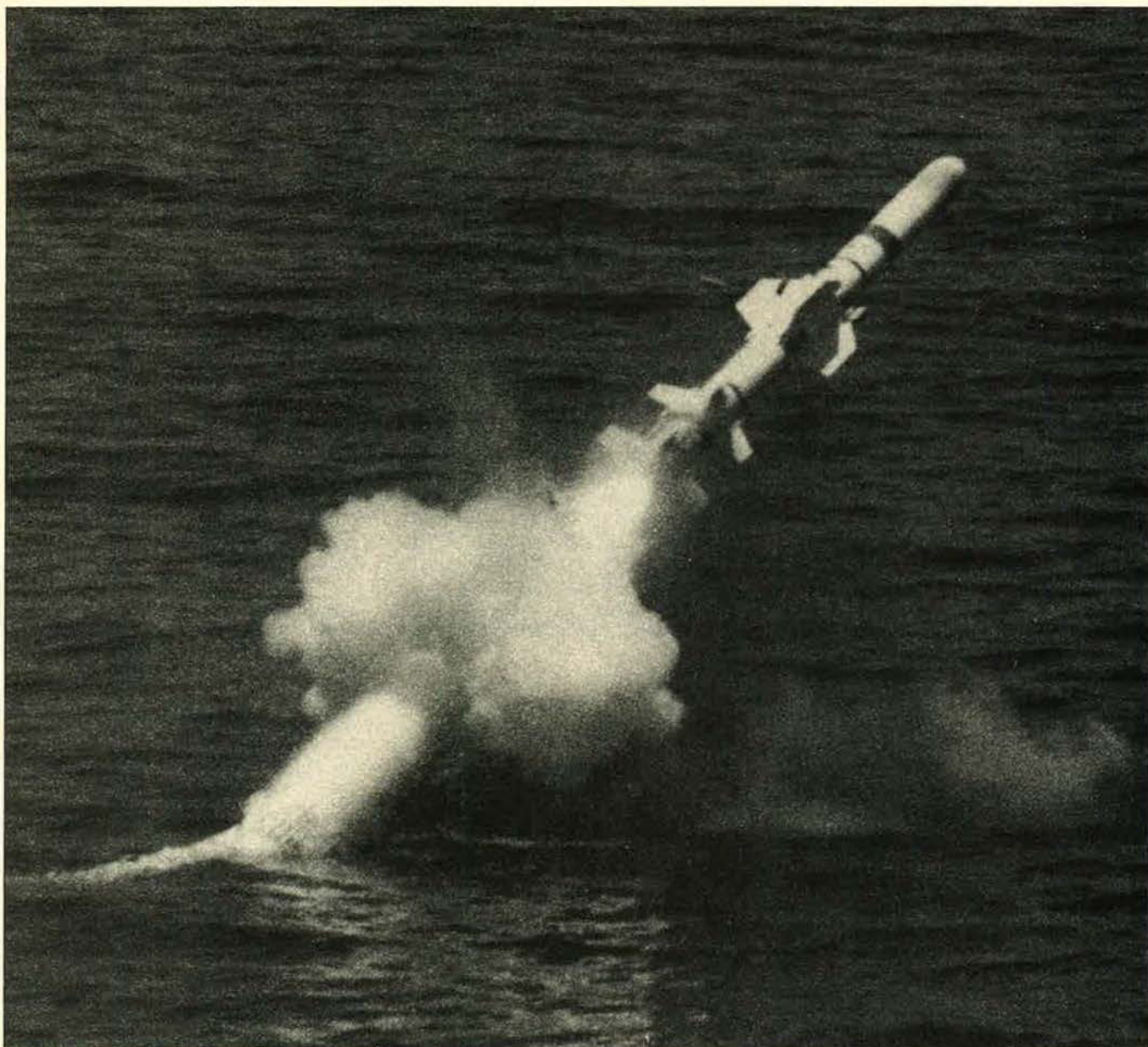
Chief Master Sergeant of the Air Force James C. Binnicker joined in honoring 1989 SCAMP scholarship recipients at AFA's Air Force Ball in October. Chief Binnicker is pictured here with four of the honorees, (from left) Michael V. Steadman, Lisa M. Latendresse, Susan J. Bosiljevac, and Wendy L. Uyeyama.

The eight students honored in 1989:

- **Susan Jean Bosiljevac**, daughter of Maj. Michael J. Bosiljevac, USAF, who was captured in Southeast Asia and died in captivity. She is a sophomore studying to be a doctor at Creighton University in Omaha.
- **Alvin Louis Hagerich**, son of Radioman First Class William C. Hagerich, USN, who was killed in action in 1970. He hopes to become a lawyer and is currently enrolled at Miami-Dade Community College, Fla.
- **Lisa Marie Latendresse**, daughter of Capt. Thomas Latendresse, USN, who was a POW in 1972 and 1973. She majors in business at the University of Washington.
- **Gayleen Rae Leonard**, daughter of CWO-2 Marvin M. Leonard, USA, who was declared MIA in 1971 and subsequently determined KIA. She is enrolled as a liberal arts student at Ferris State University, Big Rapids, Mich.
- **Shannon Lee Nelson-Serene**, daughter of Army 1st Lt. Roy L. Nelson, who was killed in action in 1971. She is an English major at the University of Texas.
- **Michael Vernon Steadman**, son of Capt. James E. Steadman, USAF, who was declared MIA in November 1971. He is a student at the Eastman School of Music in New York.
- **Amy Louise Trimble**, daughter of Capt. Larry A. Trimble, USAF, who was killed in action in 1972. She hopes to enter politics and currently attends the University of Idaho, majoring in liberal arts.
- **Wendy Lee Uyeyama**, daughter of Col. Terry Uyeyama, USAF, who was held as a POW from 1968 until 1973. Wendy is a graduate student at Texas A&M pursuing a degree in veterinary medicine.

This year's Ball will be held on October 26, 1990. ■

— Photo by Bill Belanger



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More than 5,000 Harpoon missiles have been delivered to U.S. forces and allied nations. They're on patrol now, serving faithfully to keep the sea lanes free lanes.

MCDONNELL DOUGLAS
A company of leaders.

By Gen. T. R. Milton, USAF (Ret.), Contributing Editor

A Preview in Panama?

A larger role in the "war" on drugs is certain for the US military, but that role is not yet clear. The action against Manuel Noriega suggests some possibilities.



Back in the sixties, after the US-USSR near-collision over the Cuban Missile Crisis, Washington functionaries became infatuated with counterinsurgency, perhaps as therapy

for the nuclear scare. If you were really "with it," you pronounced counterinsurgency as "COIN," and anyone who made any pretense to influence could be seen reading *Street Without Joy*, an account of the French misadventure in Vietnam. NATO was still alleged to be our principal commitment, but Southeast Asia was where both the action and the budget were to be found.

In time, this tropical excursion led to some very subjective behavior, as the military exhumed old airplanes and reinvented everything but the wheel. Robert McNamara concocted a Zen-like strategy of giving signals to the enemy, along with a little pain, the theory being that the North Vietnamese would see the futility of opposing such an invincible and powerful enemy and would come, hat in hand, to the negotiating table. Meanwhile, the North Vietnamese were given free rein in Laos and along the Ho Chi Minh Trail, which allowed them a sanctuary and made their line of communication off limits to our side's ground forces. They simply waited for us to tire and give up.

There is no point in recounting again the sad mistakes we made in Southeast Asia except to worry that we might be on the verge of blundering once more. NATO, for all the agreement about its continuing indispensability, has lost a good bit of its military *raison d'être* with the collapse of the Eastern Bloc. Certainly,

the justification for a substantial number of our divisions, wings, and ships will have to be found somewhere other than in Europe.

The world has plenty of such justifications, beginning with the Middle East, the likeliest spot for the start of the next big war. But the Middle East is a long way off, and there is no immediate prospect of US involvement. The drug war is the one in the news these days, and the armed forces are to be given an enlarged role in that conflict. Precisely what that role will be is still unclear.

Our massive drug problem is a result not only of problems in the US but also, in part, of Central American political disruption.

Aside from the Constitutional problems that may arise from military involvement in law enforcement, there is another, and nagging, question: Is this really a drug war, or is that just a catchy political phrase? If it is, in fact, a war, then we have no problem. Wartime necessarily abrogates certain rights and privileges: prisoners of war are not read their rights, given bail, or encouraged to have lawyers; aircraft follow precise corridors when approaching the coast, identify themselves correctly, or risk being shot down; and traitors are dealt with summarily. The drug war plainly has not reached that state of affairs, so it is hard to picture how the military can function, except, perhaps, in the

McNamara strategic mode of giving signals. The response to that, as the drug lords who can read must know, is to wait us out.

Our massive drug problem is a result not only of problems in the US but also, in part, of Central American political disruption. The Farabundo Martí National Liberation Front (FMLN) in El Salvador has failed utterly to develop a base of popular support, despite a Salvadoran military that has trouble grasping the "hearts and minds" principle and a Treasury Police force capable of mindless atrocities. Still, the FMLN soldiers on, courtesy of an erratic US policy toward the Salvadoran government and the unwavering support of the Nicaraguan Sandinistas, Fidel Castro, and, we must assume, Moscow.

The essential folly of the Panama Canal Treaty, along with our ingenuous belief in the good intentions of Panamanian military scoundrels, is now becoming clear. Our military action in Panama made the point that the US can still deal with tinpot dictators—although there may be some unpleasanties like canal sabotage and terrorism yet to come. In any case, Uncle Sam has a hard job ahead to reestablish credibility in the region.

A few years ago, a Central American political leader confided to a US presidential hopeful that leaders of that region had two separate policies: one for public consumption, in which US military displays of power were criticized, and a private, operative one, in which the US military was a welcome and necessary curb on such alternatives as the Sandinistas and Noriega.

The Panama operation was a display of US military strength. Perhaps of even greater significance was the demonstrated will to use that strength when sufficiently aroused. Elimination of the Noriega gang should have a distinct effect on the drug trade, and the manner in which it was done suggests a practical role for the military in the continuing campaign against drugs: an increased and visible military presence in the Caribbean and occasional joint exercises with friendly nations in the region. ■



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By John R. "Doc" McCauslin, Chief, Field Organization Support Group

B-17 Memorial

Members of Utah State AFA and Kansas State AFA saw a two-year effort reach fruition in late 1989 as a stained-glass window in memory of the men of the 384th Bomb Wing (Heavy), 1,579 of whom perished in battle, was unveiled in the chapel of the Air Force Heritage Foundation of Utah. More than \$12,000 was donated to acquire and install the window, which depicts a B-17 Flying Fortress returning to England after a bombing mission. The white cliffs of Dover can be seen in the background, and the window also bears the crossed flags of the US and the UK, the Star of David, and the Celtic Cross. It is modeled after a similar window in the Church of St. James the Apostle in Grafton-Underwood, Kettering, Northamptonshire, England.

Many AFA and USAF dignitaries attended the dedication in Utah, including National President Jack C. Price, National Directors William "Hoot" Gibson and Nate Mazer, Utah State President Glenn Lusk, Kansas State President Cleve Pottebaum, AIR FORCE Magazine Contributing Editor Gen. T. R. Milton, USAF (Ret.), and Maj. Gen. Dale O. Smith, USAF (Ret.). Today's 384th Bomb Wing, located at McConnell AFB, Kan., sent a strong contingent to the ceremony. Maj. Gen. James W. Hopp, Commander of the Ogden Air Logistics Center at Hill AFB, welcomed the guests.

In the Workshops

The Lance P. Sijan (Colo.) Chapter hosted the **Rocky Mountain Regional Workshop** at the USAF Academy Visitors' Conference Center in Colorado Springs. More than seventy representatives from AFA chapters in Colorado, Wyoming, and Utah attended the workshop, hosted by National Vice President (Rocky Mountain Region) Jack Powell. In addition to Mr. Gibson and Mr. Lusk, who were also at the dedication in Utah, National Director Vic Kregel and Colorado AFA President William Croom contributed to the success of the conference. Lance P. Sijan Chapter President Frank Wisneski, Vice President Don Dan-



At last year's New York AFA State Convention in Buffalo, Barry Dahm (center) was named Man of the Year. Here, he receives congratulations from National President Jack C. Price (left) and the award itself from former National President Gerald Hasler (right), State President at the time of the convention.

durand, and Chapter members organized a full slate of activities for the participants. Noel Bullock briefed the attendees on the mission and organization of the Civil Air Patrol and its interactions with both USAF and AFA, and a representative from AFA headquarters addressed a host of chapter issues, including election of officers, finances, congressional involvement, benefits, and the Adopt-a-Library program. Prior to the regional sessions, the Colorado State Executive Committee held a meeting to discuss state programs for 1990.

The weekend was not all business, however. Many of the participants were among the sold-out crowd that saw the USAF Academy Falcons shut down the Army football team by a score of 29-3 to win the Commander in Chief's Trophy. Even there, some business was done as AFA received a plug on the worldwide radio broadcast during halftime activities.

Also last autumn, representatives from the **Central East Region** held a workshop at the Ramada Inn in Arlington, Va. National Vice President

(Central East Region) Don Anderson and Virginia State President Jim Gleason cohosted daylong meetings that covered National Convention reports, regional and chapter concerns, AFA support of AFROTC, and AFA priorities and goals. A formal AFROTC/AFA banquet culminated the weekend, with USAF Deputy Chief of Staff for Personnel Lt. Gen. Thomas Hickey giving an informative talk on budget constraints, a smaller Air Force, and USAF's mission. Maryland State President Ronald Resh and Delaware State President Robert Berglund were among the enthusiastic participants at the workshop.

Chapter News

The **Thomas W. Anthony (Md.) Chapter** singled out "Women of Distinction" for special honors at a banquet at Andrews AFB. The annual event pays homage to women "who have sacrificed much from their personal lives to attain their positions and have unselfishly dedicated themselves to their purposes in many different fields." The following eminent



The proud winners of the Earle North Parker Essay Contest display their awards after a general membership meeting of the Fort Worth (Tex.) Chapter, which had been addressed by Vice Commander in Chief of SAC Lt. Gen. Donald Aldridge. From left, Chapter President Tom Kemp, Sara Jane Bowers and Jennifer Michelle Jones of Southwest High School, Melissa Anne Walter of Western Hills High School, and contest sponsor and AFA stalwart Mr. Parker.

women were recognized: MSgt. Olivia C. Baird, First Sergeant, 1776th Air Base Wing, Andrews AFB; Irene A. Barnett, Director, Office of Program and Resource Management for the Federal Aviation Administration; Rep. Cardiss Collins (D-Ill.); Claire E. Freeman, Assistant Secretary for Administration, Department of Housing and Urban Development; and Col. Louisa Spruance Morse, Civil Air Patrol.

The **Jerry Waterman (Fla.) Chapter** put AFA's national theme, "Youth of Today—Leaders of Tomorrow," to good use in the Tampa area. So far, the Chapter has fostered thirty-nine chapters of the Young Astronaut Program at local schools, thanks to the direction of its Vice President for

Aerospace Education, Bud Goode. Mr. Goode, the Education Services Officer at nearby MacDill AFB, recently addressed a crowd of 500 math and science teachers and students from Hillsborough County and its environs.

Encouragement of young people was also the order of the day in North Carolina. The **Piedmont (N. C.) Chapter** weighed in on the side of AFROTC Det. 590A at the University of North Carolina-Charlotte, giving recognition and support to its Commander Col. Robert Bunnell, USAF, his staff, the Cadet Corps, and a newly formed Angel Flight. Tangible support came in the form of purchase of much-needed equipment for the Detach-

ment's Honor Guard. The meeting also raised some seed money to start a chapter of the Young Astronaut Program in the Charlotte-Mecklenburg area school system.

The **Cleveland (Ohio) Chapter**, the Cleveland Wing of the Confederate Air Force (CAF), and other veteran and military groups evoked memories of days gone by with "A Gathering of Eagles" at Cleveland's Hopkins Airport. Exhibits from aviation's past (including displays of some of CAF's World War II aircraft), present, and future highlighted the event, which was followed by a hangar party featuring the music of Artie Shaw's Big Band. Participants had great fun in a worthy cause—preserving aviation's heri-



An aircraft of the recently retired SR-71 fleet received a visit from the members of the California State Executive Committee on their trip to Beale AFB. Pictured in front of the triple-sonic reconnaissance aircraft are members from each California chapter, National Director David Graham (center, dark jacket), and California State President John Lynch (on Mr. Graham's right).



SMSgt. David C. Gatewood of USAF Senior NCO Academy Class 89-C accepts the National Security & Force Employment Award from AFA Chairman of the Board Sam E. Keith, Jr., during ceremonies in Montgomery, Ala. Sergeant Gatewood is assigned to Det. 3, Southeast Sector, Cudjoe Key AFS, Fla.

tage. Funds raised will support the restoration of a recently discovered B-29 Superfortress now assigned to CAF's Cleveland Wing.

At the recent quarterly meeting of the **General Charles A. Gabriel (Va.) Chapter**, the Chapter's namesake, the onetime USAF Chief of Staff, addressed the members. His talk, "The Decade Ahead," focused on international issues. Former Secretary of the Air Force Edward C. "Pete" Aldridge and several key members of AFA's national staff were in the audience. Also at the luncheon meeting, Alice K. Pace received from General Gabriel

the Prisoner of War Medal earned by her late husband, Charles M. Pace. Lieutenant Pace was captured after being shot down over Europe during World War II. Repatriated after the war, he worked in the aerospace industry in Virginia until his retirement. Connecticut State President Al Hudson and AFA's Field Organization Support Group worked hard to make the presentation a reality.

In addition to the laurels received at the England AFB, La., Awards Luncheon, the winners also took home \$50 US Savings Bonds and AFA memberships, thanks to the work of the



Tulsa (Okla.) Chapter Treasurer John Loerch apparently doesn't mind being surrounded by a swarm of WASPs (Women's Airforce Service Pilots). He even piloted some of them on aerial tours of the Bartlesville, Okla., area, when the WASPs held their regional reunion there in conjunction with the Annual Bi-Plane Expo. Here, they relax in front of a restored Navy N3N-3.

Alexandria (La.) Chapter. Senior NCO of the Quarter MSgt. Adele G. Hawley and NCO of the Quarter SSgt. Lonnie L. Puryear, both of the 23d Security Police Squadron, and Airman of the Quarter SrA. Melanie J. Anderson received the awards for their work during the second quarter of 1988. Later in the year, the Chapter presented \$100 Bonds to the annual award winners in each category: MSgt. Clark T. McGee of the 23d Tactical Fighter Wing, SSgt. Sandra J. Reed of the 23d Equipment Maintenance Squadron, and SrA. Angela M. Robison of the 23d Transportation Squadron. The Chapter hasn't restricted its good work to the base. It also distributed complimentary copies of AIR FORCE Magazine to patients at the Veterans Hospital in nearby Pineville, La.

Have AFA News?

Contributions to "AFA/AEF Report" should be sent to J. R. "Doc" McCauslin, AFA National Headquarters, 1501 Lee Highway, Arlington, Va. 22209-1198. ■

Coming Events

February 1-2, **TAC Symposium**, Orlando, Fla.; February 22-24, **AFA Board of Directors Meeting**, San Antonio, Tex.; March 17-18, **Mississippi State Convention**, Columbus, Miss.; March 30-April 1, **Great Lakes Regional Workshop**, South Bend, Ind.; April 6-7, **South Carolina State Convention**, Charleston, S. C.; April 7, **Iron Gate Salute**, New York, N. Y.; May 11-13, **New York State Convention**, Rome, N. Y.; May 18, **Mid-America Ball**, St. Louis, Mo.; May 18-19, **Illinois State Convention**, St. Louis, Mo.; May 18-19, **Maryland State Convention**, Andrews AFB, Md.; May 18-20, **New Jersey State Convention**, Cape May, N. J.; May 26, **USAF Outstanding Squadron Dinner**, USAF Academy, Colorado Springs, Colo.; June 15-16, **Alabama State Convention**, Huntsville, Ala.; July 13-14, **Texas State Convention**, Fort Worth, Tex.; July 13-15, **Pennsylvania State Convention**, Philadelphia, Pa.; July 26-28, **California State Convention**, Los Angeles, Calif.; July 27-28, **Florida State Convention**, Tampa, Fla.; September 7-8, **Colorado State Convention**, Colorado Springs, Colo.; September 17-19, **AFA National Convention and Aerospace Development Briefings and Displays**, Washington, D. C.; October 13, **North Central Regional Workshop**, Bloomington, Minn.

Brig. Gen. (now Maj. Gen.) Richard M. Scofield (third from left) was guest speaker at the Connecticut State Convention in Meriden. He is USAF's Program Director for the B-2 and spoke about the need for such a bomber.

Pictured with the General are, from left, incoming State President Alton Hudson, National Director Joseph Falcone, the General's father Melbourne F. Scofield, National Vice President (New England Region) Joseph Zaranka, AFA Chief of Field Organization Support John "Doc" McCauslin, and outgoing State President Brad Day.



Bulletin Board

Seeking contact with Air Force personnel who were stationed in Berlin when the Berlin Wall was erected and shortly thereafter. **Contact:** William H. Grieshop, 5740 Hallridge Circle, Columbus, OH 43232.

Seeking an **Air Force Crash Boat Pin** from the Korean War. **Contact:** Bruce Miley, 2190 Aurora Rd. #45, Melbourne, FL 32925.

Information on the whereabouts of **Larry Susic**, originally from Pittsburgh, Pa., who was assigned to RAF Shepherds Grove, Suffolk, England, from 1953 to 1954 and to Albuquerque AFB, N. M., from 1954 to 1956. **Contact:** Vivien Cotton, 29 Abbot Rd., Bury St. Edmunds, Suffolk IP33 3UB, England.

Information on the whereabouts of **2d Lt. Luis Willison Huerta**, who was in 9/25th Engineers Aviation Regiment, US Army. He was possibly stationed near Retford in Lincolnshire, England, perhaps at Gringley-on-the-Hill. His last known address was in Arlington, Va. **Contact:** M. Calton, 118a Old Lane, Higher Openshaw, Manchester M11 1DD, England.

Seeking to borrow an **E6B Computer** in good working order, to solve several navigation problems for a book on a World War II bombing mis-

sion. **Contact:** Milton Radovsky, 10710 Lockridge Dr., Silver Spring, MD 20901.

Seeking information on the following members of **Capt. Floyd Mock's crew**, 856th Squadron, 492d Bomb Group, 8th Air Force, who were in England in 1944: 1st Lt. Frank O. Dunham, TSgt. Manuel V. Martinez, SSgt. Raymond E. Josephson, SSgt. Dale E. Fritsch, and SSgt. Raymond E. Hughes. **Contact:** G. W. Woods, 1717 East Maple, Enid, OK 73701.

Seeking whereabouts of **Wiley McKee**, who was an instructor pilot in 1955 at Reese AFB, Tex. He served in Europe in 1956. **Contact:** Robert H. Barnes, 35 Golden Ave., Apt. 22A, Battle Creek, MI 49015.

Seeking **pictures** of our plane, a **B-29** named "Ol' Boomerang" on the left side and "City of Birmingham" on the right, from anyone who served with the 20th Air Force in World War II, flying out of Guam, Tinian, or Saipan. We were the K-27 lead crew, 458th Squadron, 330th Bomb Group, 314th Wing. **Contact:** Leon Sarkesain, 3161 Key Blvd., Arlington, VA 22201.

Seeking information on a **Straightflight Jr. Compass**, type number 1802-2-8, serial number H-11454, made by Pioneer Instrument, a division of Bendix Aviation Corp. When I purchased it in England I was told it came from a crashed American aircraft. **Contact:** Michael L. Prucey, 7393 A Salem Dr., Columbus, MS 39701-7621.

Seeking information on the whereabouts of **Lt. "Junior" Warden**, who was a copilot on a crew with Capt. Robert Lucas, pilot, and Lt. Howard Arp, bombardier, in Europe, 559th Squadron, 387th Bomb Group, 9th Air Force. **Contact:** Howard Arp, 4742 Belle Forte Rd., Baltimore, MD 21208.

Collector of military **patches** of all kinds seeks donations and contact with other collectors. **Contact:** John Huereca, 16 Maine St., Travis AFB, CA 94535-5000.

Seeking information on the whereabouts of members of the **Old 5th Air Force "Pipe Smokers Club,"** who were at Gulfport AFB, Miss., from

1942 to 1944. **Contact:** Russell Miller, 228 19th St., Fond du Lac, WI 54935.

Former RAF Sculthorpe airman seeks recollections and details about the **B-45 Tornados of the 47th Bomb Wing**, for a review of this unit during its stay in the UK. **Contact:** Herbert Foster, 58 Hammerton St., Pudsey, West Yorkshire LS28 7DD, England.

Seeking information on the whereabouts of **Ninth Air Force Gangway Advance headquarters personnel**, who served from Normandy to Wiesbaden. **Contacts:** Col. Harold Stuart, P. O. Box 1349, Tulsa OK 74101. Maj. Ben Wright, 455 Worth Ave., Palm Beach, FL 33480.

Seeking information on the whereabouts of **Maj. William Bookout** and **Maj. John Kelly**. Major Bookout was at Support Command, RAF Brampton, then transferred to a T-37 Squadron at Vance AFB, Okla., in 1976 or 1977. Major Kelly took over his position at RAF Brampton in 1977. **Contact:** Sgt. M. P. McCourt, 20 Hansell Rd., Brampton, Huntingdon, Cambridgeshire PE18 8SL, England.

Information from anyone who knew **T/5 Dean Schone**, who was in Medical Detachment, Company D, 55th Medical Training Battalion, 515th Signal Aircraft Warning Regiment; Company B, 581st Signal Aircraft Warning Battalion; and Company B, 599th Signal Aircraft Warning Battalion at Camp Barkley, Tex., Hawaii, and Saipan during World War II. **Contact:** SSgt. Gary Schone, P. O. Box 4008, Norton AFB, CA 92409-0008.

Seeking a **Red Bomb patch EOD** (Explosive Ordnance Disposal). It was worn on fatigue caps. **Contact:** Phil Philcox, Box 500, Newcomb, N. Y. 12852.

Seeking **pictures** or information on the markings of any aircraft flown by Gen. "Chappie" James, Gen. Bennie O. Davis, Col. C. D. "Lucky" Lester, and Col. Garrett Manning. Information on other **black American pilots** will also be gratefully received, especially if it involves the Korean War. **Contact:** Norman E. Gaines, Jr., 28 Fieldstone Dr., Apt. 11C, Hartsdale, N. Y. 10530.

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 cannot acknowledge receipt of letters to "Bulletin Board." We reserve the right to condense letters as necessary. Unsigned letters are not acceptable. Photographs cannot be used or returned.—THE EDITORS

Seeking information on how to purchase or obtain **flight handbooks** for the B-47E and F-105D aircraft. I am also seeking a **color patch** from the 3554th Flying Training Squadron, as it appeared when the squadron was involved in F-86L interceptor training at Moody AFB, Ga., in the late 1950s. **Contact:** Robert G. Bradshaw, 5704 Bridle Path Lane, Montgomery, AL 36116.

Seeking information from anyone involved in "**The Purple Project**" who was attached to ATC, Fairfield-Suisun AAF, Calif., on C-54s that departed this country for Okinawa on V-J Day to evacuate our prisoners of war and wounded from Japan back to the US. **Contact:** Irl R. Mitchell, 1205 Woodrow, Wichita, KS 67203.

Seeking **aerial photos** of Kimpo AB, Korea, circa 1960, and Udorn AB, Thailand, circa 1967. **Contact:** Chuck McCarn, 842 Ravenwood Ct., Biloxi, MS 39532.

Beginning patch collector interested in any US or foreign military aviation and Civil Air Patrol **patches**. Will trade or purchase. **Contact:** George "Nick" Nicholas, 3629 Spring Valley Rd., Anniston, AL 36201.

Seeking color unit **patches** of the 43d and 54th TFS, 21st TFW, AAC, Elmendorf AFB, Alaska. **Contact:** Brad Ware, P. O. Box 2621, Redmond, WA 98052-2621.

For a directory of **aviation-related museums** in the United States, seeking the addresses and information on such museums. **Contact:** Wendy Pulsifer, 1007 Quail Hollow Dr., Mary Esther, FL 32569.

Seeking **ID (recognition) models** of aircraft, World War II to present. **Contact:** James A. Dorst, 115 Beach Rd., Hampton, VA 23664.

Historian/collector seeks **Army Air Corps leather flight jackets**. Will purchase outright or consider trade for a new one. Also seeking World War II Air Corps Squadron **patches**, wings, etc. **Contact:** Maj. C. Blanchard, USAF (Ret.) 145 Lanman Rd., Niceville, FL 32578.

Seeking contact with former **AC&W** (Scope Dopes) from the following units and locations: 772d AC&W, 1953-55; Pagwa River, 1956-57; 552d AEW&C, 1957-58; Kotzebue, Alaska, 1958-59; Falcon AFS, 1959-61; 602d ACW, Geibelstadt, Germany, 1962-65. **Contact:** MSgt. Robert L. Angelo, 3501 23d Ave., Moline, IL 61265.

Disabled-veteran artist seeks **pieces of animal horn or bone** for carving into handles for walking sticks. Also seeks F-100 patch. **Contact:** J. Cassily, 1205 Lakeview Dr., Inverness, FL 32650.

Seeking contact with former members of 339th FS, 339th FIS, 339th AWS, and other **339th fighter units** who are not members of the 339th Fighter Squadron Association. **Contacts:** Richard C. Cowles, 745 Harrison, Belding, MI 48809. John E. Zink, 394 Ridgeway Dr., Grand Junction, CO 81503.

USAF Survival School is seeking people who have a survival episode they would like to share, either military or civilian, for instructors to use during student training. **Contact:** Col. Robert M. Negley, USAF, Director of Flight Operations, 3636th CCTW/DOV, Fairchild AFB, WA 99011-6024.

Seeking tapes or records of the **Air Force Hymn** and the **Air Force Song**. **Contact:** Howard Chilton, Jr., 3306 Wiley Post Rd., Suite 106, Carrollton, TX 75006.

The US Air Force Museum at Wright-Patterson AFB, Ohio, is seeking donations of artifacts and A-2 and other **flight jackets** for two planned exhibits, one on jacket art, the other on **enlisted USAF pilots** since World War I. **Contact:** Charles G. Worman, Chief, Research Division, USAF Museum, Wright-Patterson AFB, OH 45433-6518.

Seeking photos and/or color slides of aircraft and crews that participated in any **Yuma Worldwide Rocketry Meets** held at Yuma AFB, Ariz., in the 1950s. For a history of Air Defense Command. **Contact:** Larry Davis, Squadron/Signal Publications, 4713 Cleveland Ave. NW, Canton, OH 44709.

Seeking present and former members of the **27th Fighter Squadron**, the oldest squadron in the Air Force, which is now based at Langley AFB, Va., as part of the 1st Tactical Fighter Wing, who are interested in joining the 27th Fighter Squadron Historical Association. **Contact:** Harry Urton, Secretary, P. O. Box 182, Carlisle, AR 72024.

Seeking contact with people who were with the **613th AC&W** and succeeding units at Wakkanai and Hokkaido in northern Japan. Also seeking contact with anyone interested in the **history of radar** who would like to receive a newsletter on radar. **Contact:** Donald A. Helgeson, 9200 Bennett, Evanston, IL 60203-1702.

Unit Reunions

Air Weather Ass'n

The dates of the Air Weather Service veterans reunion in San Antonio, Tex., have been changed from May 23-27, 1990, to May 16-20, 1990. **Contact:** Maj. Gen. John W. Collens, USAF (Ret.), 5301 Reservation Rd., Placerville, CA 95667.

Amarillo AFB

Personnel who served at Amarillo AFB, Tex., in the 1950s and 1960s will hold a reunion May 18-19, 1990, in Amarillo, Tex. **Contacts:** Joe Crawford, 709 S. Alabama, Amarillo, TX 79106. Phone: (806) 376-7524. Perry Stokes, 4016 Tara Dr., Fort Worth, TX 76116. Phone: (817) 244-6135.

Bombardiers, Inc.

Bombardiers will hold their reunion May 16-20, 1990, in Houston, Tex. **Contact:** E. C. "Ned" Humphreys, Jr., 200 Van Buren St., #2109, Daphne, AL 36526. Phone: (205) 626-3920.

RAAF Darwin

Army Air Corps and USAF personnel who served at RAAF Base Darwin, Australia, are invited to attend the base's fiftieth anniversary celebration on May 29-June 3, 1990. **Contact:** Wing Commander Ed Baldwin, RAAF Base Darwin, Northern Territory 0820, Australia. Phone: 61-89 805102.

RAF Station Manston

Members of the 92d Fighter-Bomber Squadron, the 513th and 514th Fighter-Interceptor Squadrons, or any other unit that was stationed at Manston will hold a reunion August 11, 1990, at Randolph AFB, Tex. **Contact:** Milton J. Torres, 11200 S. W. 99th Court, Miami, FL 33176. Phone: (305) 238-3342.

Tow Target Det.

Members of Tow Target Detachment, 72d Observation Group, who served in Panama from 1942 through 1944 will hold a reunion September 14-16, 1990, in Dayton, Ohio. **Contact:** "Bus" Bonucchi, 534 N. 10th St., Clinton, IN 47842. Phone: (317) 832-8514.

5th Air Force Memorial Foundation

5th Air Force veterans and members are planning to hold a reunion October 1990 in Las Vegas, Nev. **Contact:** Jules Teck, 1601 Cabana Dr., Lake Havasu City, AZ 86403. Phone: (602) 855-1776.

8th Tactical Fighter Wing

Members of the 8th Tactical Fighter Wing will hold a reunion September 27-30, 1990, at the

Menger Hotel in San Antonio, Tex. **Contact:** Col. Phil Combies, USAF (Ret.), P. O. Box 791261, San Antonio, TX 78279. Phone: (512) 492-8492.

28th Military Airlift Squadron

Members of the 28th Military Airlift Squadron will hold a reunion August 31-September 3, 1990, at Hill AFB, Utah. **Contact:** Vic Liseck, 3540 Nantucket Dr., Fairfield, CA 94533. Phone: (707) 425-6644.

Class 42-B

Members of Aviation Cadet Class 42-B will hold a reunion June 21-24, 1990, at the Holiday Inn in Fairborn, Ohio. **Contact:** Alvin H. Nurre, 4343 Errun Lane, St. Bernard, OH 45217. Phone: (513) 641-2903.

Class 43-A-1

Members of Class 43-A-1 (Mather Field, Calif.) will hold a reunion September 12-16, 1990, at the Holiday Inn in Fairborn, Ohio. **Contact:** Sid Radus, 611 Civic Center Dr. W., Suite 201, Santa Ana, CA 92701. Phone: (714) 541-4411.

Class 43-D

Pilot Class 43-D will hold a reunion April 25-29, 1990, at the Monteleone Hotel in New Orleans, La. **Contact:** John H. Carlson, 3045 Silverview Dr., Stow, OH 44224.

44th Bomb Group/Wing

Members of the 44th Bomb Group and Wing will hold a reunion May 23-27, 1990, at the Holiday Inn in Norfolk, Va. **Contact:** Lt. Col. William H. Topping, USAF (Ret.), 1426 Vadera Ct., Fenton, MO 63026. Phone: (314) 225-7030.

Class 50-D

Members of Pilot Training Class 50-D are planning to hold a fortieth anniversary reunion August 2-5, 1990, in Colorado Springs, Colo. **Contact:** Ed Wilford, 615 Pembroke Rd., Bryn Mawr, PA 19010.

Class 52-E

Members of Pilot Training Class 52-E/Korea Tactical Reconnaissance (1952-53) will hold a reunion September 6-9, 1990, in Washington, D. C. **Contact:** Tom Dinwiddie, 11000 S. Glen Rd., Potomac, MD 20854. Phone: (301) 983-3152.

55th Weather Recon Squadron

The 55th Weather Reconnaissance Squadron will hold a reunion June 7-9, 1990, in Philadelphia, Pa. **Contact:** Jim Flannery, 169 Durham Rd., Pennel, PA 19047. Phone: (215) 752-5102.

58th Fighter Ass'n

Veterans of the 58th Pursuit Group, 58th Fighter Group, 58th Fighter-Bomber Wing, or 58th Tactical Training Wing who served in World War II and Korea will hold a reunion May 3-6, 1990, in Hampton, Va. **Contact:** Anthony J. Kupferer, 2025 Bono Rd., New Albany, IN 47150. Phone: (812) 945-7649.

69th Fighter Squadron

The 69th Fighter Squadron, 5th Air Force (World War II), will hold a reunion June 1-4, 1990, in Bedford, Mass. **Contact:** George E. Mayer, 7445 Thomas Ave. S., Richfield, MN 55423. Phone: (612) 866-6073.

73d Bomb Wing

Members of the 73d Bomb Wing (B-29 Groups), which included the 497th, 498th, 499th, and 500th Bomb Groups and the 65th, 91st, 303d, and 330th Service Groups, plus attached and assigned units, who served on Saipan will hold a reunion May 10-13, 1990, at the Airport Marriott Hotel in St. Louis, Mo. **Contact:** Glenn E. McClure, 105 Circle Dr., Universal City, TX 78148.

Reunion Notices

Readers wishing to submit reunion notices to "Unit Reunions" should mail their 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.

F-86 Sabre Pilots

F-86 Sabre Pilots will hold a reunion May 28-June 1, 1990, at the Desert Inn in Las Vegas, Nev. **Contact:** Jim Campbell, P. O. Box 6050, Franklin, MI 48025. Phone: (800) 421-1933.

90th Bomb Group

The 90th Bomb Group will hold a reunion May 17-19, 1990, in Seattle, Wash. **Contact:** John J. Bily, 2505 W. Fulton St., Seattle, WA 98199. Phone: (206) 284-1805.

325th Fighter Group

The 325th Fighter Group "Checkertails" will hold a reunion June 7-10, 1990, in Kalamazoo, Mich. **Contacts:** Dan Penrod, 69 Keswick Ave., Pittsburgh, PA 15202. Phone: (412) 766-6190. John L. Gaston, 1402 Mears Dr., Colorado Springs, CO 80915. Phone: (719) 596-5556.

352d Fighter Group

Members of the 352d Fighter Group will hold a reunion and Air Force Academy monument dedication October 4-7, 1990, in Colorado Springs, Colo. **Contact:** Richard J. DeBruin, 234 N. 74th St., Milwaukee, WI 53213. Phone: (414) 771-0744.

381st Bomb Group

The 381st Bomb Group will hold a reunion July 31-August 4, 1990, in Madison, Wis. **Contact:** Joseph K. Waddell, Jr., 7407 Bridge Rd., Madison, WI 53713-1804. Phone: (608) 222-4591.

434th Fighter Squadron

Members of the 434th Fighter Squadron, 479th Fighter Group (World War II), will hold a reunion September 9-16, 1990, at the Holiday Inn Fair Oaks in Fairfax, Va. Members of the 435th and 436th Fighter Squadrons are also welcome. **Contact:** John Stanovich, 8910 Harrivan Lane, Fairfax Station, VA 22039. Phone: (703) 690-1843.

441st Troop Carrier Group

Members of the 441st Troop Carrier Group, which included the 99th, 100th, 301st, and 302d Troop Carrier Squadrons (World War II), will hold a reunion October 9-11, 1990, in San Francisco, Calif. **Contact:** Bill Parkhill, 8509 Grenache Ct., San Jose, CA 95135. Phone: (408) 274-8230.

450th Bomb Group

The 450th Bomb Group is taking a memorial dedication trip to Manduria AAB, Italy, on March 20-27, 1990. **Contact:** Robert H. Gernand, 1054 San Remo Rd., St. Augustine, FL 32086. Phone: (904) 797-7348.

475th/8th Fighter Wings

Members of the 475th and 8th Fighter Wings (Itazuke/Korea) and all supporting units who served between 1947 and 1953 will hold a reunion April 18-22, 1990, at the Green Oaks Inn and Conference Center in Fort Worth, Tex. **Contacts:** Bill McGlohen, 6413 Lansdale Rd., Fort Worth, TX 76116. Phone: (817) 732-4330. Col. Donald E. Miller, USAF (Ret.), 5221 Las Cruces Dr., Las Vegas, NV 89130. Phone: (702) 645-7552.

556th Bomb Squadron

The 556th Bomb Squadron, 387th Bomb Group, will hold a reunion September 13-16, 1990, in Denver, Colo. **Contact:** Paul R. Priday, 7755 Harriott Rd., Plain City, OH 43064.

Detachment 657 AFROTC

Former cadets and staff members of the Air Force ROTC Detachment 657 at Kenyon College are invited to a twentieth anniversary reunion commemorating the closing of the Detachment on May 25-27, 1990, at Kenyon College in Gambier, Ohio. **Contact:** Lt. Col. William F. Paraska, USAF, 6250 Moorfield Ave., Colorado Springs, CO 80919. Phone: (719) 554-5569 or (719) 593-1582.

751st AC&W Squadron

Members of the 751st Aircraft Control and Warning Squadron (633d Aircraft Control and Warning Squadron) will hold a reunion April 19-22, 1990, in Dayton, Ohio. **Contact:** The Mount Laguna Association, c/o Guy Palumbo, 7614 Springvale Dr., Louisville, KY 40222.

4756th Combat Crew Training Squadron

Members of the 4756th Combat Crew Training Squadron, which included Permanent Party F-101 and F-106 instructors and staff, from August 1962 through 1966 will hold a reunion May 17-20, 1990, at the Ramada Inn in Panama City, Fla. **Contact:** Robert E. Patterson, 95 Country Club Rd., Shalimar, FL 32579. Phone: (904) 651-4830.

11th Bomb Wing

For the purpose of organizing a reunion, I would like to hear from members of the 11th Bomb Wing, 11th Air Refueling Wing, and the 92d Air Refueling Squadron who served at Altus, Carswell, and Clinton-Sherman AFBs from 1957 through 1964. **Contact:** Carl Schweinler, 1901 Kenilworth Circle, Hoffman Estates, IL 60195. Phone: (708) 885-3626 (home) or (708) 437-0200 (work).

Class 53-B

I would like to hear from members of Class 53-B (Hondo AB, Tex./Williams AFB, Ariz.) who would be interested in holding a reunion this fall in the Langley, Va., area. **Contact:** Lt. Col. Frank J. O'Brien, USAF (Ret.), 16 Van Dr., Bordentown, NJ 08505. Phone: (609) 298-3075.

465th Bomb Group

We are trying to locate Ralford L. Crouch for a reunion of the 781st Bomb Squadron, 465th Bomb Group, that served during World War II. **Contact:** Walter Longacre, 1350 Christy St., Fremont, NE 68025.



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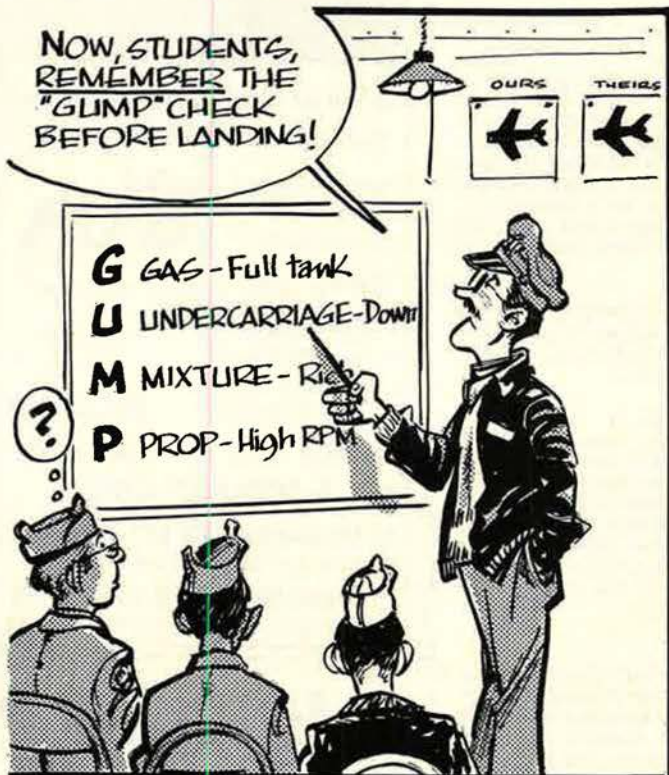
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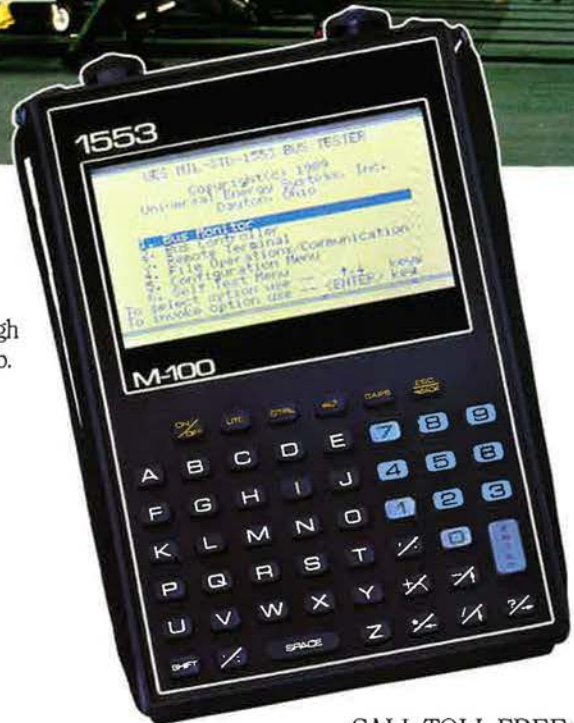
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