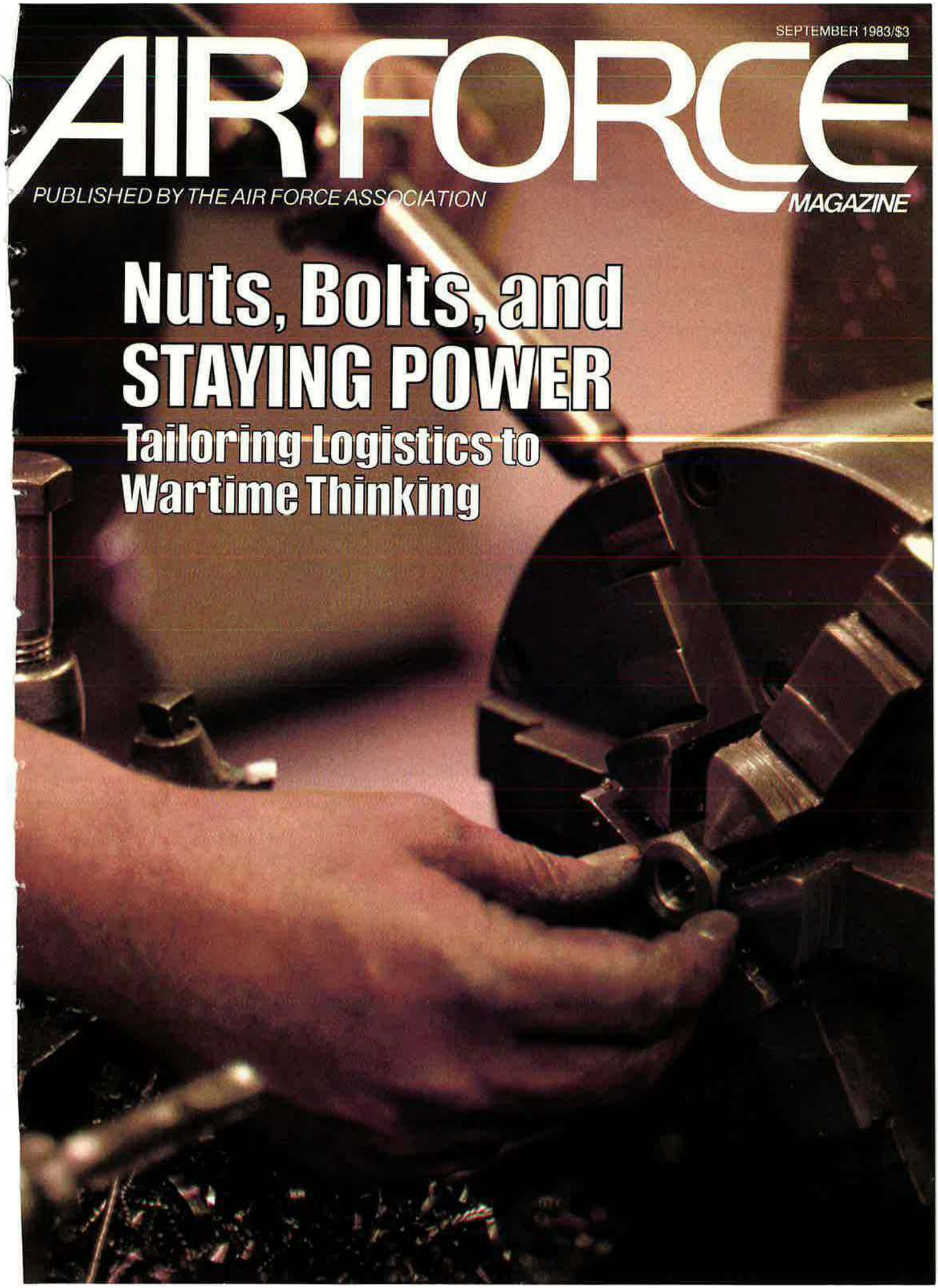
SEPTEMBER 1983/$3

AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION



Nuts, Bolts, and STAYING POWER

Tailoring Logistics to Wartime Thinking

It can complete any lon
altitude. An

For its strategic, conventional and cruise-missile missions, the Rockwell International B-1B Long-Range Combat Aircraft is superbly qualified to do the job. Its range, payload and penetration capabilities make it the most survivable strategic aircraft in the world.

Its General Electric F101 engines are a key reason.

A perfect match of aircraft, engine and mission

Designed specifically for the B-1, GE F101 engines provide the right mix of thrust, handling, durability and reliability needed to enhance mission success. Not only for terrain-following penetrations as low as 200 feet, but also for high-speed, high-altitude standoffs.

A tough engine for tough missions

Twelve years of improvements and technology spin-offs are rooted in every F101. So the Air Force will have a mature engine before it ever enters service.

F101 core components are identical to those of the F110, which will make fighters like the F-16XL more operable and more durable.

Examples? A demonstrated 3,000-hour hot section life before the first production engine is shipped. That's the equivalent o ten years of in-service operatio simplified exhaust nozzle to red engine weight. Bleed pipes in a neutral configuration to allow engine assemblies to be install any engine position. And turbi inlet temperatures that provide maximum performance, reliab and durability.

Low operating costs, to

One reason: design and p commonality with other GE en in the F101 family. Another rea exceptionally low fuel consum for such a high-performance e

ange combat mission at any
or good reasons.

another reason: on-condition
ntenance procedures that
mize maintenance actions and
costs low.

perience
kes the difference

As the core engine for the
B, the F101 shares technology
components with a family of
engines that are setting stan-
ds for a host of different aircraft.
F404 on the F/A-18 attack
ter. The CFM56 on the KC-135R
er and commercial jetliners like
ew-generation DC-8s and the
737-300. And, in flight testing,
110 on the F-16 and F-14
ers.

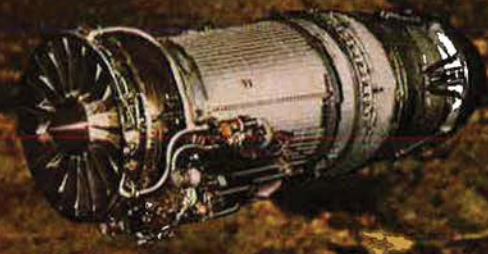
The F101, in short, is not only proving its mettle powering the B-1B, it's also benefiting every day from the experience gained from other engines in the family.

Engines that set new standards

The GE philosophy is simple: develop military engines that surpass previous standards and exceed customer requirements.

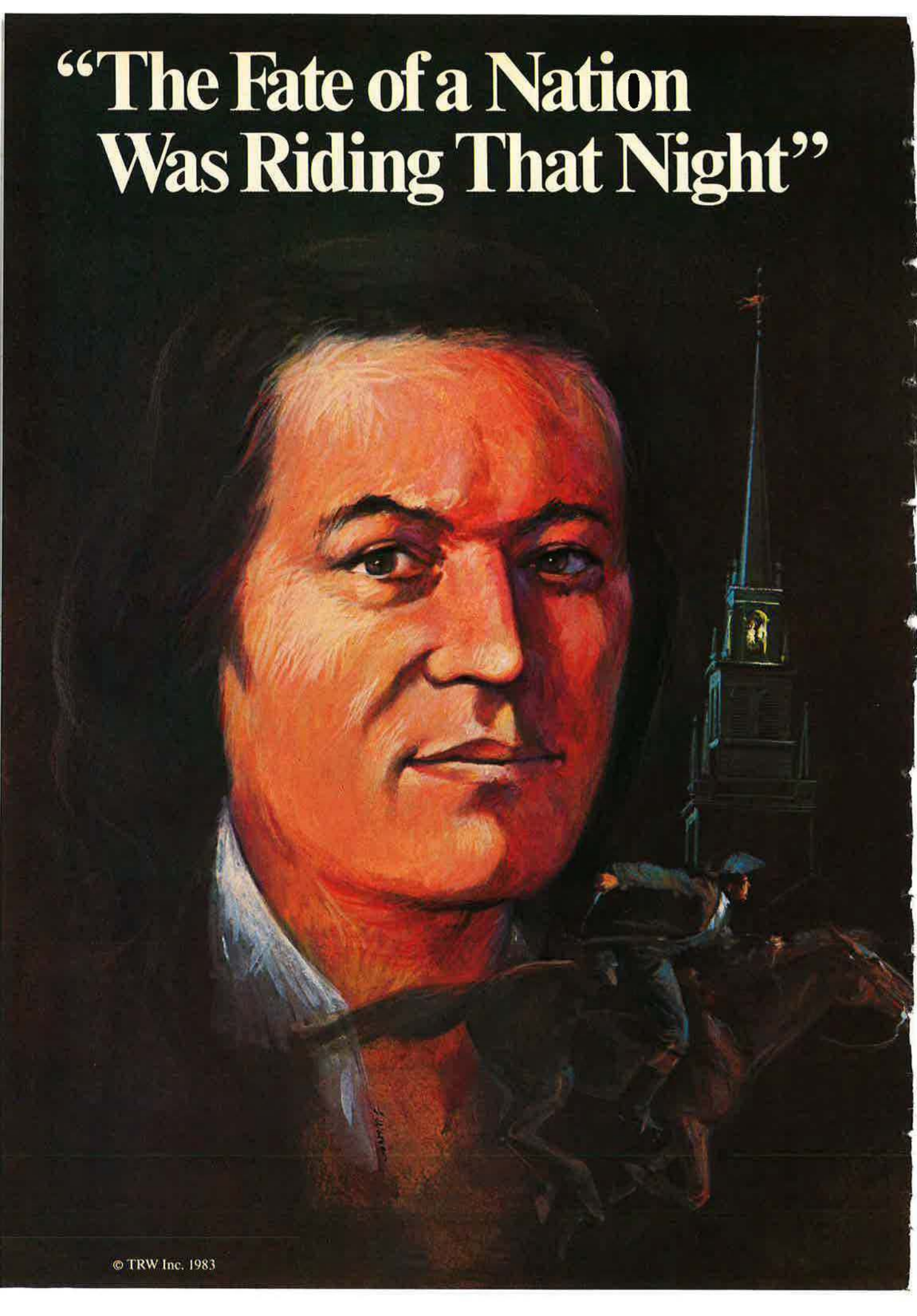
That's what the F101 is doing for the B-1B. And what other GE engines — like the F404, T700, CFM56 and F110 — are doing for aircraft as diverse as the F/A-18, the Black Hawk, the KC-135R and (in flight testing) the F-16 and F-14.

For lots of good reasons.



GENERAL ELECTRIC

"The Fate of a Nation Was Riding That Night"



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April—1775: "Seize the colonials' stores of arms and powder," orders King George to General Gage. He must soon act, but when? And where?

Boston's revolutionaries of the day include Adams, the mind, and Hancock, the money; and another member of the leadership, the tiny "Committee of Safety," is a middle-aged artisan, Paul Revere. His job is C^3I.

With 30 other Sons of Liberty he meets regularly at the Green Dragon Tavern. "We formed ourselves in a committee, gaining every intelligence, two-by-two patrolling the streets all night." C^3I is critical. It is the force multiplier through which they hope to control events, politically and militarily.

Little has changed. WWMCCS, the Worldwide Military Command and Control System, today provides commanders and decision-makers the data to determine what actions to take. Now, TRW is ready to tackle WIS, the WWMCCS Information System, a program of improvements in consistency, reliability, and logistics support.

Revere rides express. In preceding weeks he pushes himself no fewer than three times along the path to Philadelphia and New York. Carrying news and plans, he helps organize the officers of the militia, and organized they must be for the treason they pursue will pit unschooled farmers against the British regular.

WIS pits the complexities of the modern era against the systems engineering and integration skills of TRW and its team. Millions of lines of software, numerous and redundant communication links, varied and distributed processors all must be tied into a C^3I system second to none.

TRW has demonstrated the skills; providing systems engineering and technical assistance for Minuteman and Peacekeeper, writing what at the time was the largest real-time software program ever devised for the Site Defense Project, building TDRSS the world's first space-to-space communications system. On WWMCCS itself, TRW's working knowledge is the result of twelve years of systems engineering support.

Like Revere, WIS forms the key link between top level decision-makers and the forces in the field. Modernizing the system will require new software tools, higher software productivity, and special attention to the man-machine interface. These tools we have. For the Navy, TRW is upgrading and integrating their C^3 systems. OSIS, the Ocean Surveillance and Information System will provide real-time situation assessments. For NATO, LOCE, the operational version of the TRW testbed Battlefield Evaluation and Target Acquisition System, is on-line in Europe providing multisource intelligence data. Our GEODDS sites scan the skies worldwide to sense threats secreted in space.

Flexibility remains a key aspect of any successful C^3I system. Returning to Boston in early April, Revere lays plans. A marked man, he fears being trapped in Boston. Should the British move he will arrange to signal from Old North Church.

WIS too will be flexible, for future program needs are no more predictable than General Gage's plans. TRW is committed to the WIS program; we are establishing a base in Boston dedicated to it. Our team includes CSC with fifteen years experience providing software support to WWMCCS, and Infometrics experts in ADA-based languages.

"By sea!" reports Dr. Joseph Warren, who has already dispatched one express rider to warn Lexington and Concord, known targets. Soon Revere has two lanterns hanging, gleaming their message to the Minutemen in Charleston. As planned, other riders leave immediately. Before the British reach their boats, the alarm is spread. Revere makes his way to Charleston where mounting a good horse he rides to Lexington. On the way to Concord he is captured. No matter. He is redundant, his message sent long since. The rest is history.

At TRW we are making some history of our own. The Defense Systems Group is one of the leading systems engineering and integration groups in the world. We employ computer scientists, mathematicians, electrical engineers, physicists and systems engineers. The qualifications are high and the challenges great.

TRW offers an excellent salary and benefits package that includes flexible working hours, medical/dental/vision plans, relocation assistance and a vacation package that includes a Christmas week shutdown.

For information about job opportunities, contact: D. Drugman

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TRW Defense Systems Group

FOR THE AIR COMBAT ARENA OF THE 1990's!

$$\int_{\text{CONCEPT}}^{\text{SYSTEM}} \left[\left(\begin{matrix}\text{Flight control} \\ \text{technology}\end{matrix} \right) + \left(\begin{matrix}\text{Innovative} \\ \text{application}\end{matrix} \right) + \left(\begin{matrix}\text{Quality} \\ \text{awareness}\end{matrix} \right) \right] dt = \left\{ \begin{matrix}\text{Mission success} \\ \text{Survivability} \\ \text{Flight safety} \\ \text{Affordability}\end{matrix} \right\}$$

CHECKLIST FOR THE 90's

Technology	*Our status*
Digital fly by wire	✓
1750 processor	*in progress*
J73/ADA software	*in progress*
Fault tolerant architecture	
– in hardware	✓
– in software	✓
Direct drive actuation	*in progress*
VHSIC/VLSI	*in progress*
Fiber optics	*in progress*
Multivariable control	✓
Active control	✓

At the Astronics Division of Lear Siegler, we have the complete equation for success in the combat arena of the 1990's. Advanced technology, innovative application and attention to the details of quality at all levels are vital to meeting the ever increasing demands of next generation combat aircraft.

We are preparing for the future with aggressive applied technology research and development programs, and a unique quality awareness that have made us leaders in safety-of-flight and fly-by-wire control applications. We have been producing the world's first production fly-by-wire control systems since the mid-1970's. This year we are flight testing the world's first microprocessor based digital fly-by-wire control system in a production aircraft. And we have been selected to develop digital fly-by-wire control systems for two 1990's production aircraft.

Our Flight Systems Technology Group, in Dayton, Ohio, is developing new concepts in the applications of integrated control and flight safety technology.

LSI is leading the way to the future!

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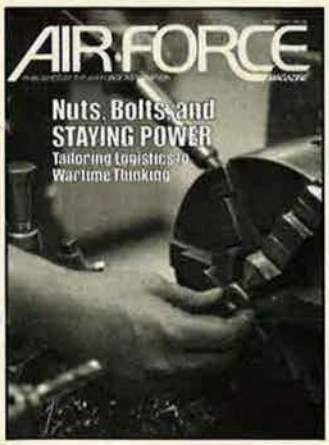

About the cover: All the combat forces in the world aren't worth much if they can't be supported and sustained. A special section on logistics and readiness begins on p. 46. (Cover photo by Art Director William A. Ford)

The Combat Lifeline Gets Stronger . . .

. . . As Priorities Shift and Posture Improves

Features

Departments

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SMITHS INDUSTRIE
AND WEAPON AIMING S

SMITHS INDUSTRIES

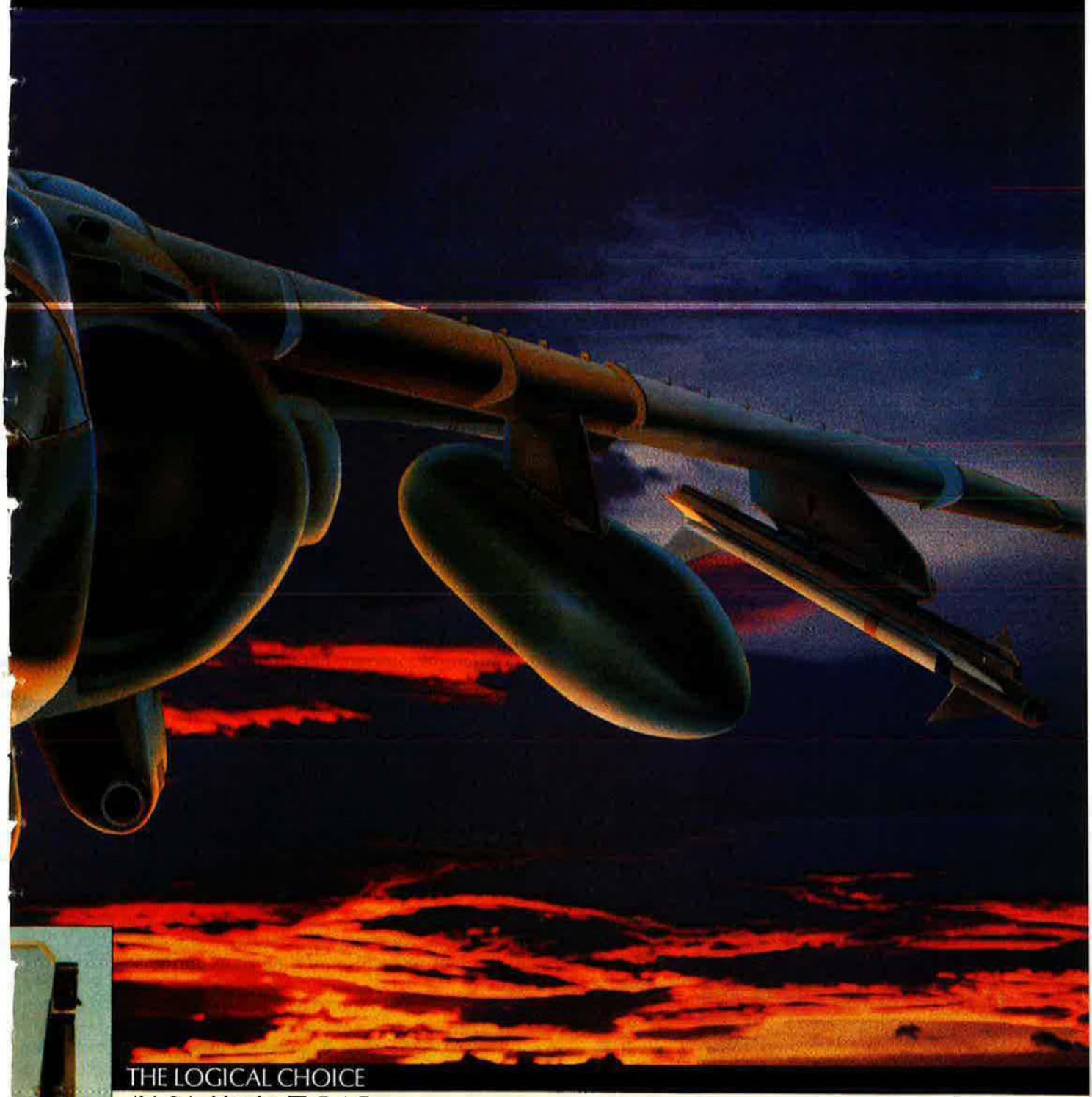
Smiths Industries head-up display – the heart of the Harrier avionics system – proved a major contribution to the success of Harrier operations in the South Atlantic conflict.

In every mode–flight, navigation, attack and weapon-aiming–Smiths Industries head-up display performed faultlessly, enhancing the Harriers' manoeuvrability and weapon system.

Smiths Industries head-up displays are chosen for Harriers, Sea Harriers,

CHELTENHAM DIVISION, BISHOPS CLEEVE, CHELTENHAM, GLOS. GL52 4SF ENGLAND

HEAD-UP DISPLAYS TEMS – COMBAT PROVEN



THE LOGICAL CHOICE

AV-8A, Harrier II, R A F Jaguar, Indian Air Force Jaguar, JA37 Viggen and the multi-national Tornado. Proof indeed of their combat proven effectiveness.

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AN EDITORIAL

Telling the Whole Story

THIS month, I'm skipping a sermon and suggesting that readers only skim this editorial and very quickly turn the pages to the rest of this issue of AIR FORCE Magazine.

The reason is this: The articles in this issue will yield more useful information and practical dividends to readers than even we hoped for when its planning began. That is, the dividends will be there if you the reader will make the effort to become informed on topics that until now were sort of hidden behind the parts-room door.

The reference is to the topics of logistics in general, and of spare parts in particular. Much has been made of so-called spare parts horror stories recently. The case of the $916 the Air Force paid for a cap for a navigator's stool, or the Navy's paying $110 for a four-cent diode made newspaper headlines and the evening news on television. Those were only the most-emphasized of the many valid cases of spares overpricing. The Secretary of Defense and his deputy promptly promised reform, and Secretary Weinberger followed up by issuing a set of ten commandments "to ensure that we are not plagued with pricing abuses in the future."

But what the media missed, and Secretary Weinberger failed to point out, was that the Air Force itself, through its own earlier initiatives, had uncovered the worst cases and had begun remedial reforms. Publicly, however, the implications and accusations depicted the services as rubes, bilked by slick contractors.

Maybe so. But there's more to the story than such a simplistic answer. For instance, consider the leaked Pentagon inspector general's report that stirred up such a fuss. The "investigators" picked out a sample of 15,000 parts from the millions possible. We understand the sample was biased, not random. That aside, the leaked accusations said that thirty percent of the parts increased in price over certain periods. With that, the wailing and lamentations began. That ignores the fact that seventy percent of the parts prices must have remained constant or decreased. That reasoning has not made the evening news programs.

Therefore, for perspective, let me urge you to look at USAF Chief of Staff General Gabriel's article on page 126 for clarification, and how the Air Force is recovering from the conscious decision of the 1970s not to provision spares adequately. Then read Secretary Verne Orr's article starting on page 121 on how the Air Force is remaining alert to overpricing, and doing something about it.

Then spend some well-rewarded time on three pieces by Senior Editor John Correll: "Why Spares Are Short," page 56; "Beyond the $916 Stool Cap," page 65; and "AFLC Prepares for War," page 46. Follow up with Senior Editor Bill Schlitz's "Warfighting in Europe" and Jim Canan's "Up From Nifty Nugget," and you will have a much better feeling for where things really stand.

With that concept and background absorbed, please enjoy the other features and departments in this Anniversary issue. It works toward our goal: To keep you abreast of the state of aerospace power today. With spare parts in particular, we believe it's important to give you the entire picture, not just the scare headlines or a fraction of the whole.

F. Clifton Berry

F. CLIFTON BERRY, JR.
EDITOR IN CHIEF

Lightning-Fast Information: Collins JTIDS Class 2 Terminals

JTIDS, the Joint Tactical Information Distribution System, will soon be a reality as the Collins Government Avionics Division of Rockwell International and Singer's Kearfott Division complete full-scale development and begin production of Class 2 terminals.

The JTIDS terminals will make it possible for Air Force and Army elements to coordinate missions with reliable, real-time information. AWACS aircraft and F-15 aircraft will share common information with ground air defense, artillery and surface-to-air missile commands over the JTIDS network. The services will share data on enemy forces' position, speed and strength, and important information about friendly forces, such as identity, weapons status, fuel reserves and position.

The U.S. Air Force and Army have selected Singer and Rockwell to supply prototype Class 2 terminals based on the wealth of avionics experience we are contributing to the JTIDS program, including:

- 40 years of Collins experience in RF systems and 20 years of tactical data link experience, including Link 4 and Link 11.
- Frequency-hop and anti-jam experience as demonstrated in the Collins SINCGARS V program.
- Proven production technology and capacity to manufacture JTIDS terminals at a reasonable cost.
- Design-to-Cost and reliability goal achievements with the Collins AN/ARN-118 (V) TACAN and AN/ARC-186 VHF Comm.

Singer and Rockwell are committed to providing the Air Force and Army the lightning-fast information they need. To find out more about the JTIDS program and Rockwell's role in it, contact:

Collins Government Avionics Division
Rockwell International, Cedar Rapids, Iowa 52498
(319) 395-2208.

Rockwell International

...where science gets down to business

Communication Concepts from the Bell System:

How to be every-where.

Today, commanding officers are often faced with the demand for their presence *at* their headquarters and, simultaneously, *at* their subordinate units. The executives, scientists, and engineers of the Bell Network have developed communication concepts making it possible to do just that, be everywhere at once.

Consider this scenario: Your subordinate units are dispersed over a sizable geographic area. Yet face-to-face you're able to tour your entire command without leaving your headquarters, and without your subordinates leaving theirs.

The concept is called Teleconferencing, or conferencing over distance. It effectively multiplies your most limited and valued command resource: your own personal time, by limiting instead the time you spend in transit throughout your command.

It is a dramatic demonstration of what you can do with the most powerful and dependable communications network in the world, the ubiquitous Bell Network.

The Bell Network enables you to interconnect, selectively or simultaneously, specially adapted conference rooms deployed strategically throughout your command. You're able to see and talk with your subordinates and their staffs and transmit visual aids by video link, you're able to send hard copies of supporting documents by data link, and you're able to drive home your points with a 'chalk-talk'—using a blackboard that reproduces your notations electronically on monitors in each of the conference rooms.

In short, Teleconferencing is simple, two-way, and feels as dynamic and compelling as if you were at each headquarters in person.

To find out how the Bell System can help you tailor a Teleconferencing system, large or small, that puts the Network to work for you, call your Account Manager. In the Washington, D.C. area, call 457-0177. Elsewhere, call **1800 424-2988.**

Communication Concepts from the Bell System

Expanding your ability to communicate.

Find out about advanced RLG technology from an industry leader– talk to Litton.

In 1973 Litton entered the Ring Laser Gyro business to discover an existing industry-wide mindset that disturbed our engineers and scientists. It was apparent that laser backscatter was unacceptably excessive in the triangular configuration. A square pathway reduced offensive backscatter appreciably, significantly.

We discovered also that industry-standard mirrors were equally unacceptable. Our scientists and engineers attacked this problem also, with enthusiasm and determination. Today, we can proudly state that our RLG mirrors are the finest in the world.

Yes, by discarding industry anachronisms, by incorporating new, better engineering and science, and by using only the latest state-of-the-art technology and manufacturing processes, Litton has established itself as an industry leader. Our diversity of product line is appropriate to tactical and strategic missiles, ships and aircraft, and submarine navigation. We are currently involved in a number of both component and system programs, some of which have been won in competition with established manufacturers.

Inertial Sensor Assembly Development for MRASM
LTN-90 ARINC System production
CAINS II Development and Flight Test Program
USAF RLG Standard INU Development and Flight Test Program
NWC Second-Source Gyro Development Program
NADC Fail-Op/Fail Safe Integrated Inertial Sensor Assembly (ISSA) Program

We have RLG production facilities in California and Utah. If you want to learn more about advanced Ring Laser Gyro technology, talk to an industry leader. Talk to Litton. Call Litton Industries Guidance & Control Systems Division, 213-715-4321 or 715-2324.

Litton

AIRMAIL

Not Competitive?

While I agree that the Paris Air Show is a splendid way for the United States to show its aerospace strength, I do not agree with your statement that "the US government does not really support strong international marketing of its own aerospace industry's products" *("US Fallback at Paris," p. 6, July '83 issue).*

We who were in the military security assistance business were instructed long ago to cooperate with the US industry representatives in helping to make the right contacts within our respective countries for marketing the US product without compromising our own unique liaison position. In performing this minor service, the security assistance folks are afforded a bird's-eye view of how US industry really competes in the international marketplace.

After four years of assisting the US aerospace industry representatives, I can only conclude that the US aerospace product is not competitive. Although the US aerospace product is the preferred article, most countries cannot afford the price tag. In cases where our price is comparable to that of the foreign product, our financing is not.

The French, Italians, British, Brazilians, and Argentines have come on strong and are offering very neat, well-tailored financial packages. I do not believe we need more government involvement to help sell the US aerospace product but rather a renewed spirit of competitiveness among the US aerospace industrial community—to include innovative financing.

The US housing industry found itself in the same pickle, but worked it out with new ideas in creative financing. The US auto industry finally woke up to the fact that it was getting whipped by the foreign product in the international and domestic marketplace. More government involvement is not the answer.

The bottom line: Quit looking for government help or handouts and get our best brains in the US aerospace industry to work on how to create a system of innovative financing tailored to make the US product highly competitive in the international marketplace once again.

Col. John P. Sanchez, USAF
Vienna, Va.

JCS Reorganization

Several articles in the July 1983 issue of AIR FORCE Magazine deal in one way or another with the need for cooperation between the services. In particular, I refer to the detailed and excellent report by F. Clifton Berry, Jr. *("USAF Doctrine Comes Alive," p. 34).*

However, there is no mention of the basic need for structural change in the military organization as urged by retired Joint Chiefs of Staff Chairman Gen. David C. Jones and as reported in the article "The System Will Change" in the July '82 issue *(p. 38).*

It seems to me that the root causes of the rivalrous relationship between the services, particularly between the Air Force and the Navy, could be dealt with much more effectively if the process of reorganizing the services was carried out seriously and with determination.

As General Jones remarked about the overriding need to reorganize in order to increase combat capability, "I'm convinced it's the most important national security issue facing this country."

Lt. Col. T. Russell Mager,
USAF (Ret.)
Tacoma, Wash.

Upgrading ARPC

The "Bulletin Board" item in the July '83 issue concerning the Air Reserve Personnel Center becoming a Separate Operating Agency caught my attention. I assume that the article is the result of a press release from the Pentagon, and that there would be no reason for AFA to check the past history of ARPC and the fine work it has done over many years in Air Force Reserve and Air National Guard affairs.

However, the article tells only half the story. ARPC *was* a Separate Operating Agency during most of its existence and operated in an outstanding manner in managing Air Force Reserve affairs, including assistance to the Reserve units assigned to major air commands for training and administration. When those units were mobilized, ARPC played an important function in bringing them into the active forces.

I was fortunate to serve as the Vice Commander at ARPC (1969–73) under the command of Col. Leland Walker until his retirement, and then under his replacement, Col. Ben Catlin, until my retirement in 1973. I recall vividly that Commanders Walker and Catlin and I spent a great deal of time, together with the fine staff we had available, trying to convince all concerned that ARPC should under no circumstances be stripped of its status as a Separate Operating Agency. That battle was lost in later years, and ARPC and its Reserve management function was swallowed up in a new active-force management structure that restricted ARPC's ability to act in its previous positive manner for Reserve strength and capability.

Now, as a so-called "new" Separate Operating Agency, it appears that once again the Reserve function will have an ARPC that can speak forcibly for it and that can provide a higher level of centralized management to benefit the Reserve function in particular and the total defense posture in general.

Let us hope this organizational mistake is not made again.

Col. Willard Stukey,
USAF (Ret.)
Ellenton, Fla.

• *For more on the ARPC, see "The Air Reserve Personnel Center Mission: Mobilization," p. 64, October '81 issue. (Incidentally, former ARPC Commander Benjamin S. Catlin is now AFA's Assistant Executive Director for Defense Manpower Issues.)*—THE EDITORS.

Bring Back the T-6?

In the July '83 issue of AIR FORCE Magazine *(p. 27),* a reengined T-33 (Skyfox) is absolute proof that USAF's Air Training Command *could still* be using the AT-6 for basic flying training, and the above-cited reengined

AIRMAIL

T-33 (Skyfox) for advanced training! This idea, of course, would have trashcanned the T-28, the T-34, the T-37, the T-41, the T-38, and the forthcoming T-46; the difference is, of course, a savings of billions and billions of taxpayer dollars. Change for sake of change is expensive and nonproductive.

I submitted the idea of a reengined T-33 in 1953 using a single Rolls-Royce Tay engine, in 1957 with a single GE J47, and in 1961 with two Pratt & Whitney J60s. I was thought to be somewhat comic for trying to save a well-built and -designed aircraft. The taxpayers' money has been wasted on image and politics. It is not surprising that the public relations people of the military services are extremely busy trying to maintain the credibility of new military programs!

The need for supersonic training in flight school? That, of course, was a PR publicity gimmick from inception.

Maj. Mack J. Kalahar, USAF (Ret.)
Salinas, Calif.

Not Alone

In your July '83 issue story, "The Loneliness of Command" *(p. 77)*, you wrote that Maj. Gen. Haywood S. Hansell led the first [B-29] strike against Tokyo on November 24, 1944.

He may have led one of the planes, but on the same mission was Brig. Gen. Emmett O'Donnell, who flew *Dauntless Dottie*, and 1,000 or so other crew members—officers and enlisted. Twenty-four planes bombed Tokyo by radar, sixty-four planes bombed other targets, twenty-three planes aborted, two B-29s were lost, and eleven planes were damaged. I know, because I was there.

I don't want to take anything away from General Hansell, but he was not alone on that mission. All of us did what we had to do, and we did it well.

Murray Juvelier
Flushing, N. Y.

Combined Efforts

I always scan the "Airmail" section in AIR FORCE Magazine, and in the July '83 issue a letter appeared suggesting moral support for a B-17 postal stamp to be issued while some of us AAF veterans are still living *(p. 12)*.

General Spaatz made the statement that "the B-17 was the single weapon most responsible for the defeat of Germany." Having flown in a B-24 over Europe from Italy, I believe that it was the combined efforts of all aircraft and all air forces in the European theater that helped to soften up the enemy. Many times reports were sent home by the news media stating that "the Forts strike again." The home-front patriot was subjected to the "Fort" indoctrination, but didn't know the difference between a B-26 and a B-17. They couldn't appreciate the fact that there were A-20s, A-26s, B-25s, etc., all with gallant crews.

About the 12,000-plus B-17s built—there were 18,000 B-24s built. The Fifteenth Air Force had one wing of B-17s; the rest were B-24s.

Perhaps a more fitting stamp would be one with the emblem of the USAAF, which would give recognition to all ground as well as flying personnel in all theaters of operation for a job well done.

And let's not forget "GI Joe," who had a really dirty job following up after us. We needed each other (including the sailors) to achieve that day of final victory.

Clarence P. Miller
Souderton, Pa.

Not So Fast!

In regards to Walter N. Lang's article, "What the Computer Hath Wrought," in the July '83 issue *(p. 68)*: I cannot help but point out an error on page 71.

It was stated that the Exocet missile that struck the British destroyer HMS *Sheffield* "took less than twenty seconds to reach the target from twenty miles away." According to the best published data, the Exocet is credited with a top speed of about Mach 0.93—rather short of the Mach 4.6 speed necessary for a twenty-mile dash in twenty seconds. Moreover, most published accounts confirm that the Exocet attack on the *Sheffield* was initiated at around *six* miles distance.

Apart from the aforementioned oversight, I congratulate Mr. Lang for his informative article on a subject that is often misunderstood or taken for granted. Advanced computer technology, without a doubt, can be the decisive edge in both combat and logistics. But while Mr. Lang reaffirms that a man in the loop is invaluable, it is somewhat disconcerting to note that the general public may still harbor misconceptions about the modern, electronic Air Force.

The article brought to mind an incident I experienced last year while visiting the Dayton Air Fair. As I was watching the Canadian Snowbirds aerial demonstration team, a civilian bystander approached me, apparently as awed by their performance as I was. "That's really something," said the camera-clutching spectator, "but those guys really aren't doing all that. It's all run by computer, right?"

Enough said.

John Hernandez
Lawrence, Kan.

In his recent article on computers, "What the Computer Hath Wrought," Walter N. Lang indicated that an Exocet missile covered twenty miles in less than twenty seconds.

That would require an airspeed of approximately 3,600 mph. I thought the Exocet had a speed more on the order of 600 mph.

Capt. Nelson Mayhew, USAF
Little Rock AFB, Ark.

• *Readers Hernandez and Mayhew are correct.*—THE EDITORS.

Maligning Israel?

On his verbal flyby of the "Mediterranean rim" *("The Stout and the Strident on the Mediterranean Rim," June '83 issue, p. 96)*, Gen. T. R. Milton, USAF (Ret.), stopped just long enough over Israel to malign and vilify the US's foremost strategic ally and only reliable democratic friend in the Middle East. The technically competent General apparently lacks objectivity, knowledge, or sensitivity—or all three—on the people and issues of that area. Otherwise, he wouldn't shoot from the hip with claims that US "client" Israel is not concerned with US public opinion or policy, that US aid to Israel is "largesse," or that Egypt can be counted on as "a US friend."

The truth is that Israel has shown a concern for US policy to a greater extent than any other nation on this earth. She has voted with the US on issues important to the US at the United Nations more than eighty-six percent of the time—a level significantly higher than that of Britain, Canada, France, or West Germany. Our "moderate" Arab states (creators and sustainers of the world's leading international terrorist organization, the PLO), including Saudi Arabia, Jordan, and "friend" Egypt, have sided with the US to generally the same degree as have Russia and her stooges. (And for a glimpse into our future prospects, it is interesting to note that Saudi King Fahd himself recently admitted to Henry Kissinger that "my army is de facto pro-Khomeini.")

As for General Milton's term "largesse" for the approximately $1.5 billion yearly grants to Israel: They probably represent one of the biggest

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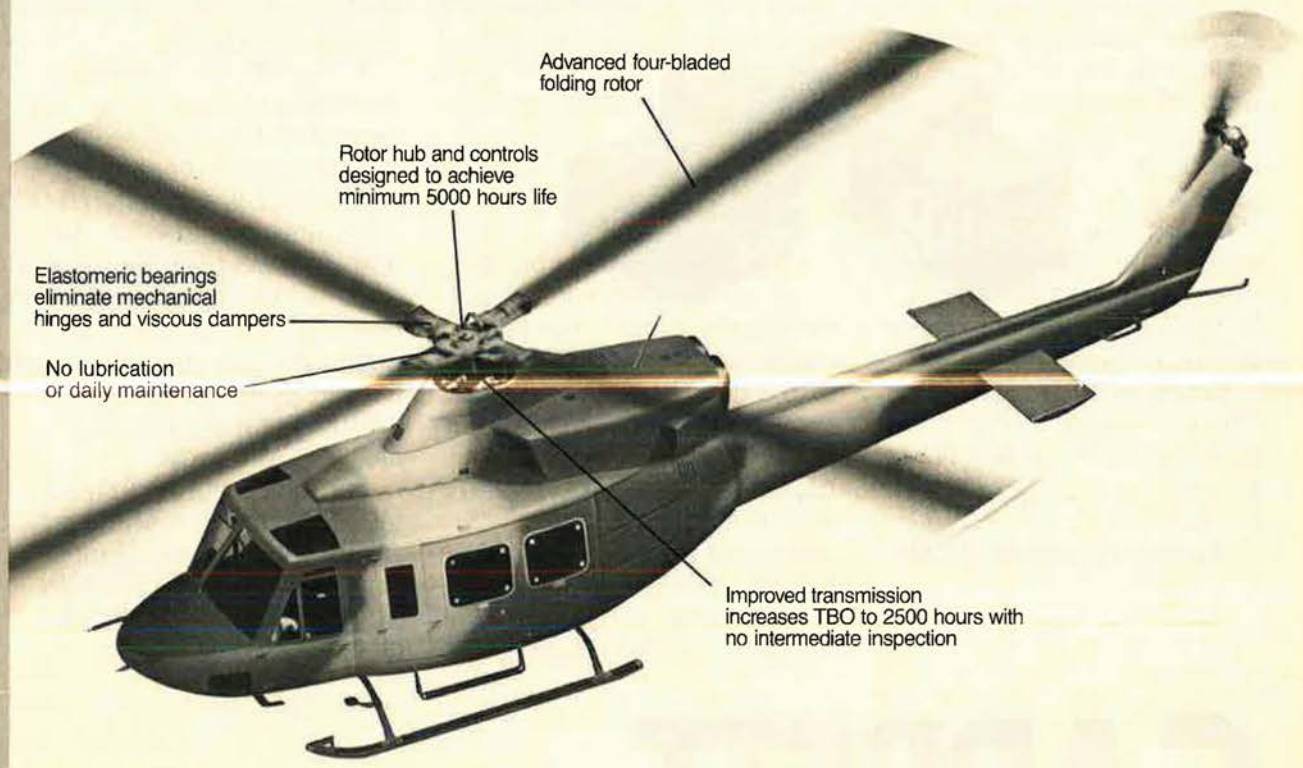

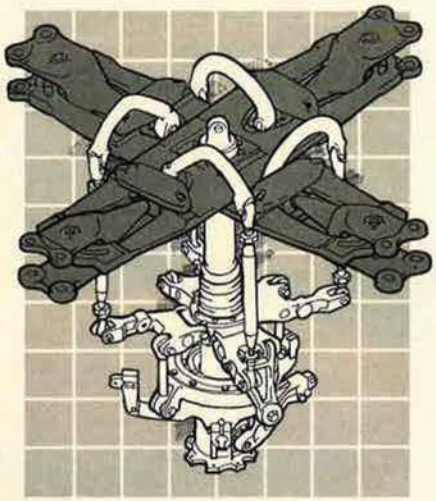

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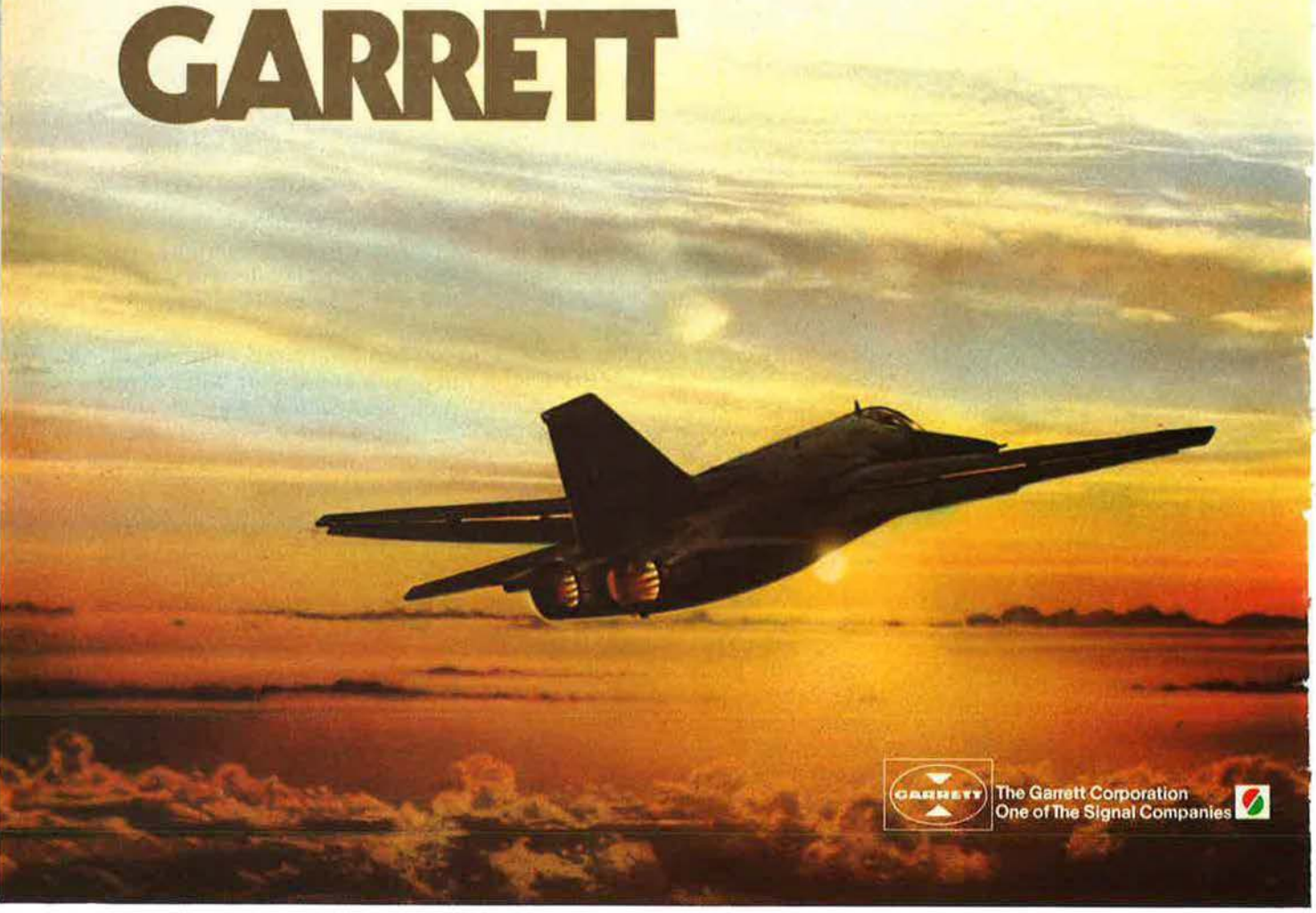

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bargain values in the federal budget. It has been estimated that it would cost the US taxpayer more than $125 billion per year to maintain an armed force the size of the pro-Western Israeli Army in order to provide an anti-Soviet deterrent in the Middle East (as we do in support of NATO for $81 billion per year, or Japan and the Far East for $38 billion per year).

More than 260 retired generals and admirals, including eight of four-star rank, recently wrote the President to "urge you to revitalize the strategic cooperation between the United States and Israel, thereby enhancing the safety and well-being of the free peoples of the world." Among their recognition of Israel's value to the US, they said that "Israel constitutes the only US ally capable of [an] immediate parry to a serious thrust against free-world interests in this theater. And Israel's continued sharing of vital intelligence on Soviet operations constitutes the other essential element of US security in the Middle East."

No doubt a factor in General Milton's slap at Israel was its rejection of President Reagan's so-called Peace Plan. The latter was like asking that country to commit suicide. How would we react if an ally pressured us to dismantle all our defenses in exchange for a Russian promise of peace? In fact, the Reagan Peace Plan is only a US attempt to do for the rich and vast Arab states that which their repeated aggressions against a tiny neighbor have not succeeded in doing—namely, decimating and then totally destroying the state of Israel.

The Reagan Plan is part of the absurdity of US policy in the Middle East, whereby a world power is tied to the coattails of Arab ambitions and fantasies to the great delight of our enemies and the dismay of our true friends.

Bud Dworkin
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The Screaming Bear

The effectiveness of US and NATO weapon systems can be measured by how loud the Soviet Union screams against them.

Based on this observation, we apparently had the potential for a very effective NATO weapon in the neutron bomb. Soviet screams and their moves to prevent deployment of neutron weapons to NATO worked. They exercised every possible organization under their sphere of influence and finally succeeded in convincing the Carter Administration to withhold production and deployment of neutron weapons. This was a loss to the West. We had devised at least one effective means of deterring Soviet tanks from attempting a blitz across Germany.

History seems to be repeating itself concerning deployment of the new Pershing II and ground-launched cruise missiles (GLCMs) to Europe. The Russian Bear is screaming again.

He is well along the way with production and deployment of his new SS-20 missiles against NATO Europe. The fact that this highly mobile and accurate missile has three independently targetable nuclear warheads and that the missiles can be launched from the Soviet homeland against West European targets does not in

any way reduce the volume of the howls against our efforts to counter the SS-20 with NATO Pershings and GLCM missiles.

We have planned to counter 600 Soviet SS-20s with 1,800 nuclear warheads by placing 572 new US missiles in Europe over the next few years. When it became known to the Soviets that these missiles, 108 Pershing IIs and 464 GLCMs, all with single warheads, would be located in Germany, Italy, and England, and that they were highly accurate and relatively invulnerable, the Bear screamed.

The Bear says no one should be allowed to strike Moscow within eight minutes of launch from West Germany. This situation cannot be tolerated. The SS-20s must not be countered. These new US missiles could be highly effective.

We should be flattered. When the Soviet Union reacts so violently, it must mean that they have given our missiles very high marks. This Soviet reaction could be the best indication we have of the effectiveness of our nuclear weapon systems.

The Bear now says that to counter these new US weapons there must be a nuclear freeze. Freeze testing, production, and deployment of nuclear weapons. Freeze in place. Preserve the advantage of the SS-20 in Europe. Do not let the first Pershing II be produced or deployed to West Germany. Hold up on the cruise missile production and deployment to England and Italy. Bring all of the anti-nuclear-weapon forces into play.

We say all right, then consider a zero option, consider dismantling and verifying destruction of all Soviet SS-20 missiles. No, of course not! More screams! The Russian Bear must also counter all of those French and British weapons directed at Moscow. There will be no zero option—only zero US Pershings and GLCMs.

That old Bear is telling us something. The message is that we have an effective means to counter him, and we shouldn't give up or be screamed out of maintaining our means of deterring nuclear attack. When the Bear screams the loudest, our ability to deter nuclear war is probably reaching new levels of effectiveness.

The screaming Bear was successful in turning off the neutron bomb. Will we let him stop our next effective deterrent to war in Europe?

Col. Robert T. Duff,
USAF (Ret.)
Frederick, Md.

Inspiring

The story of flight surgeon Lt. Col. John Paul Stapp's arduous task perfecting the ejection seat was truly inspiring *("The Track to Survival," p. 64, May '83 issue).*

If Colonel Stapp had displayed the same dogged determination, valor, and devotion to duty during a wartime combat situation, he would have earned a Medal of Honor.

Harold O. Christensen
San Francisco, Calif.

AIRMAIL

Southwest Pacific

A colleague and I are in the process of preparing for publication a book on USAAF airmen and aircraft in the Southwest Pacific theater during World War II.

The book will be a pictorial record of USAAF activities in the Southwest Pacific. By using lengthy captions to the photographs, we will attempt to provide readers with an accurate picture of the harsh conditions under which operations were conducted in this theater.

The captions will also contain the historical facts necessary to give the proper perspective to any work of this nature.

To date we have in excess of 450 photographs. However, information on some aspects of operations in Australia and New Guinea has proven difficult to obtain.

We would like to hear from any reader who was a member of the Fifth or Thirteenth Air Forces and who was stationed in the Southwest Pacific. In particular, contact is sought with air and ground crews who flew and maintained A-20 aircraft of the 3d, 312th, and 417th Bomb Groups, and any members who flew B-17s with the 19th and 43d Bomb Groups. Information is sought regarding flight characteristics of the aircraft, their suitability to the types of operations in which they were employed, combat techniques, and the aircraft's combat survivability. The experiences of the ground crews who maintained these aircraft would also be invaluable.

All correspondence will be answered. Please send replies to the address below.

Kevin D. Ginnane
c/o Photographic Section
RAAF Base
Fairbairn, Canberra
A.C.T. 2600
Australia

Shangri-La

May I, through "Airmail," endeavor to contact any members of the 4th Fighter Group who were based at RAF Debden during World War II?

Since 1968 I have been engaged in a variety of archeological expeditions locating, recovering, or documenting the many wartime crash sites throughout the United Kingdom. We have located wrecks in lakes, rivers, the sea, on mountains, and in peat bogs. Virtually all of them have provided items of interest which in due course are passed to the Royal Air Force Museum or one of the many other interested bodies.

I come now to the main purpose of my letter. During the war, one of the better known US Army Air Forces aces was Capt. Donald S. Gentile of the 336th Fighter Squadron, 4th Fighter Group. His P-51 *Shangri-La* is, of course, well known. However, as is also quite well known, the aircraft was wrecked on April 13, 1944, during a low-level beat-up of Debden. Rumor, which has long since become legend, has it that the wreck was written off due to "enemy action" and buried locally or sunk in a nearby lake. Whatever the truth, it has never been found despite many attempts to locate it.

I would dearly like to find the remains, if indeed they do still exist, if only to ensure that they eventually end up where they belong—somewhere in the United States. But who knows the truth? If legend is based on some degree of fact, as opposed to wishful thinking, what really happened to Gentile's aircraft? Even if someone could state quite categorically that it was reduced to scrap, it would lay the ghost once and for all.

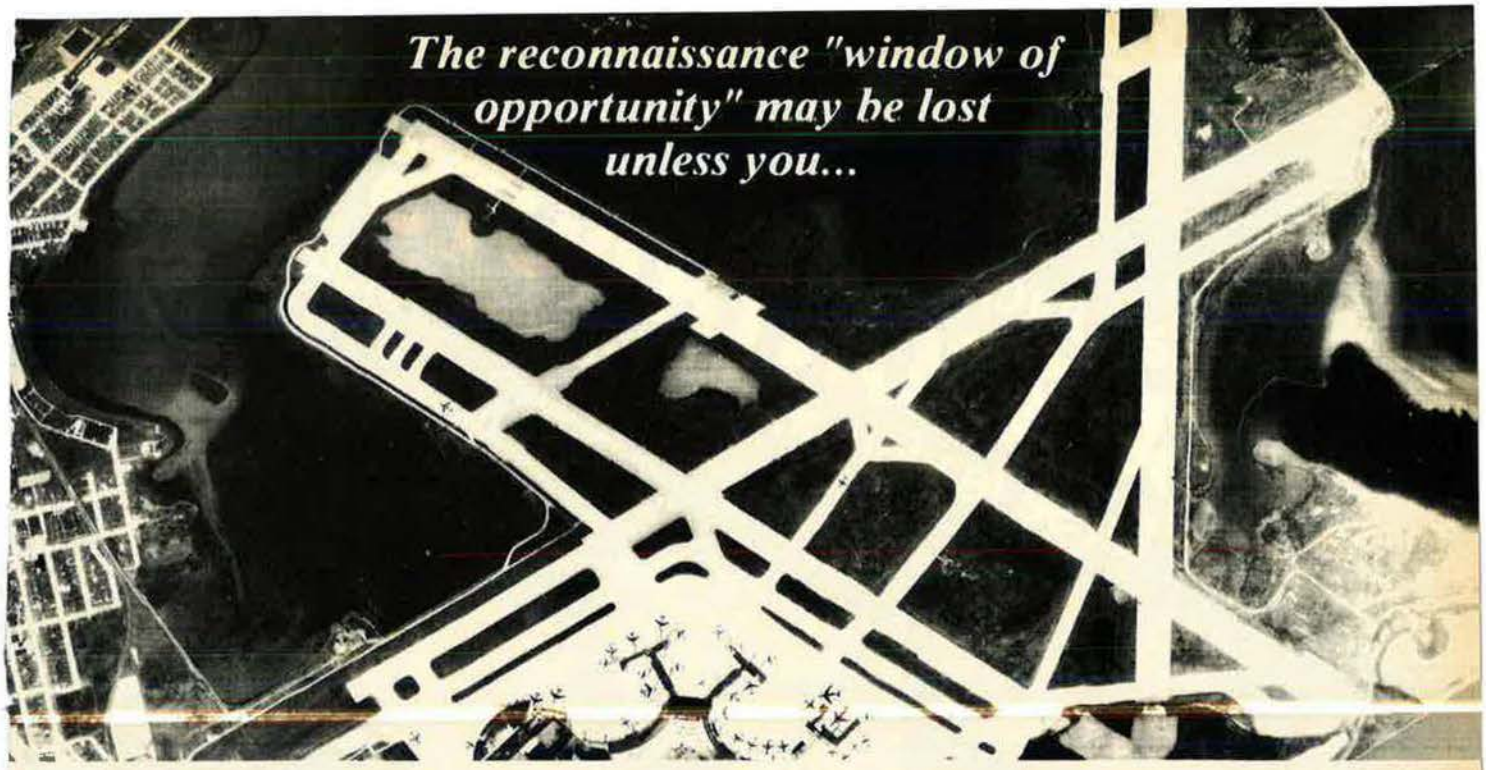
Sqdn. Ldr. R. E. Leach, RAF
Headquarters
No. 1 Group
Royal Air Force
Bawtry
Doncaster, Yorkshire
England

463d TAW Film

This letter is my last hope in that one of your readers might be able to help me.

Between January 1970 and August 1971 I was stationed at Clark AB, the Philippines, as a C-130 loadmaster assigned to the 463d Tactical Airlift Wing. During this time, a short movie was made about the activities and accomplishments of the wing with the Hercules aircraft. The title of the film, at that time, was *Anything, Anywhere, Anytime,* and it was produced by a Lieutenant Underwood, a member of the wing.

A limited number of copies were



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made available and sold, but my crew was on rotation to Cam Ranh Bay and, when we returned some two weeks later, all available copies of the movie had been sold. Rumors at that time were that other copies would be made, but this proved false. Eventually, I was reassigned Stateside and discharged in 1972.

I have since been in contact with Captain Underwood, still a pilot with the 463d, and he gave me some information with which to work in attempting to obtain a print of the movie, now in the Air Force inventory as film FR 1323, 463d Airlift Operation. So far, all the information I have has led to a dead end.

I would very much appreciate it if any readers might be able to pass along any information that they might have in regards to obtaining a 16-mm print of the film. I am certainly willing to pay for the cost of the film and the reproduction and mailing of it.

William A. Carroll
284 Frontenac St.
Chicopee, Mass. 01020
Phone: (413) 592-9645

4th Fighter Group

I am seeking information for a monograph on the "war-weary" P-51s flown by the 4th Fighter Group. I have obtained a small amount of information during recent research at the Air Force Museum, and would appreciate any assistance from your readers.

I have photographs of the exterior of P-51B-1-NA, s/n 43-12193, code WD-2, operated by the 335th Fighter Squadron; another P-51B, s/n unknown, code VF-4, operated by the 336th Fighter Squadron; and a P-51B, s/n 43-12793 (tail code WW312793), which was converted to a two-seat aircraft by TSgt. Woody Jensen.

I am in particular need of interior photographs or information on the interior details of these aircraft, and information on how these aircraft were converted to two-seat aircraft while in theater.

Any information will be copied and returned, and credit will be given to the contributors.

All material should be mailed to the address below.

Richard M. Cole
502 Barksdale Boulevard West
Barksdale AFB, La. 71110
Phone: (318) 222-8803

Twentieth Air Force

I am the chairman of the committee to construct the Twentieth Air Force monument on Guam.

As readers may know, the Twentieth Air Force's XX Bomber Command was the main thrust of airpower against Japan during World War II. In commemoration of the fortieth anniversary of the recapture of Guam from the Japanese, a group of civilian and military personnel are combining forces to honor the men and women of the United States Army Air Forces who served in this part of the world during World War II.

We would appreciate it if we could have or borrow from readers any materials, photos, or booklets pertaining to the Air Force on Guam during World War II.

Please contact me at the address below.

Ben G. Munoz
P. O. Box 1595
Agana, Guam 96910

ANG History

I am an aviation historian and photographer engaged in research of various Air National Guard units. In most cases, it is very hard to obtain the information I need. (The material is being gathered for a forthcoming book about ANG history and unit insignia, and for our magazine *Reconnaissance*.)

I would like to hear from readers who are able to help me with the histories of the ANG units they have served in, unit insignia, and pictures they may have. I am especially looking for photos taken during the period between World War I and World War II and from 1946 until 1960.

All material will be handled properly, and will be promptly returned after use.

G. H. J. Scharringa
Leliestraat 3
3732 DS De Bilt
The Netherlands

F-4 Phantom

I am collecting data on the McDonnell Douglas F-4 Phantom in order to write a monograph.

I would appreciate the help of any readers who have flight manuals, operator's manuals, and technical data on the various models of this aircraft. I would like to purchase some of these manuals, but I can undertake to copy and return any material.

Any information on these planes will be appreciated.

David J. Porter
4645 Alvin Dark Ave.
Apt. 4
Baton Rouge, La. 70820

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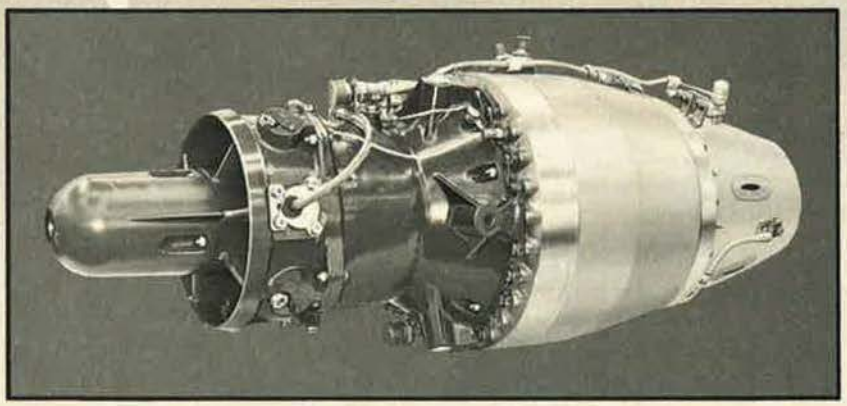

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IN FOCUS...

A New Era of Smart Weapons?

By Edgar Ulsamer, SENIOR EDITOR (POLICY & TECHNOLOGY)

The West Germans say yes to improved conventional weapons, no to VTOL aircraft.

Washington, D. C., July 28

West Germany's Defense Minister Manfred Woerner told this writer that his government is committed to the development and deployment of new families of smart standoff weapon systems that, in the aggregate, should make it possible to "fight the second echelon [of the Warsaw Pact] conventionally and thereby raise the nuclear threshold."

Following detailed analyses by the FRG's Defense Ministry of the feasibility and efficacy of such precision-guided standoff weapons, he recently informed Defense Secretary Caspar Weinberger that "we are ready for intensive discussions with the US over the concept, philosophy, and [ultimately] the procurement" of such systems. He implied that West Germany's commitment to such a program—whose fruition might be ten or twelve years away—was more than rhetoric and would involve full financial participation.

Through a combination of austerity measures—including a military and Civil Service pay freeze extending over eighteen months—and improving economic conditions in West Germany, he said "we will be able to do what we must" in terms of associated research and development and procurement. His government is making it clear to the electorate that "we can't . . . reduce our dependency on nuclear weapons without spending the money" needed to upgrade the effectiveness of conventional weapon systems.

Minister Woerner, highly regarded here and abroad as a defense analyst, suggested that opening up a new era of "smart standoff weapons" would benefit NATO forces far more than the Warsaw Pact forces. He enumerated several reasons why the Soviets would be extremely vulnerable to such weapons, though development of comparable capabilities on their part would be far less consequential to the West. For one, he pointed out, a majority of the NATO forces is already "forward-deployed" in the first echelon, meaning in West Germany, whereas the Soviets and other elements of the Warsaw Pact forces are dispersed widely over vast geographic areas.

Secondly, "theirs is an echelon concept and ours isn't." Evidence of this strategy abounds, and—recent Western hypotheses to the contrary—Soviet adherence to this tiered approach is intensifying, he reported, with the Warsaw Pact's dependence on the timely arrival of the rear echelon forces being essentially total. As a logical consequence, Soviet fighting forces are structured in line with this strategy. "That is why a Soviet division has [such limited integral] logistics support and why, even though smaller than ours, it has the same firepower." Conversely, these units depend on rapid resupply and reinforcement, he pointed out.

Lastly, the German Defense Minister believes that, in case of war with NATO, the Soviets will be the attackers and hence required to mass their forces in depth, to mobilize extensively, and to break through the NATO defenses: "As a result they need the second echelon a great deal more than we do."

The German Defense Minister's enthusiasm for fundamental revisions of conventional warfare capabilities was in marked contrast with his skepticism concerning the advisability of shifting tactical airpower into the VTOL and V/STOL (vertical or vertical/short takeoff and landing) regime. Extensive German studies of the utility of V/STOL or VTOL combat aircraft concluded that in order to be effective they would require a vast "infrastructure" in terms of logistics support, that they would be needed in vast numbers, and that it appears "totally unlikely that you could ever get the funds needed to place them all over."

These analyses by the German Defense Ministry, he added, also suggest that it would be far more cost-effective to "improve the defenses of our airfields and aircraft than to go to V/STOL." The British experience with the Harrier V/STOL aircraft, he said, reaffirms the military advantage of operating in a STOL rather than a VTOL mode, and "of course, we try to construct [new aircraft] with short takeoff capabilities so that we can operate from the [German highway system], something that we practice already. In short, we don't think that V/STOL is the solution."

In contrast with this unenthusiastic German assessment of the potential of military V/STOL technology, influential elements of the US Defense Department have been importuning the US Air Force as well as allied air forces to get on the V/STOL bandwagon and initiate suitable R&D programs. Presumptions of impending dramatic increases of Soviet counterair capabilities, ranging from highly accurate, runway-busting, conventionally armed, medium range ballistic missiles to the growth in offensive tactical airpower, underlie the Defense Department's eagerness to orient future tactical air operations toward the V/STOL regime.

A key concern of the Germans, Minister Woerner explained, is the glaring military weakness that results from inadequate NATO air defense, which he viewed as a far more urgent issue than the development of V/STOL fighters. Explaining that US, German, and collocated air bases were not sufficiently protected, he said that he had discussed with senior US officials, including Secretary Weinberger, the urgency of fielding a combination of Patriot and Roland air defense systems in Germany. As a result of these bilateral discussions there exists the possibilitiy of an agreement on the financing and deployment of such air defenses. He declined to discuss specifics at this time, however.

The German official cautioned that the eventual deployment of jointly developed advanced standoff weapons must not be seen as vitiating two key tenets of NATO's deterrence strategy. Raising the nuclear threshold by means of advanced conventional warfare capabilities does not permit "us to renounce nuclear capabilities, be that short-range, medium-range, or strategic weapons." The nuclear forces, he stressed, must remain "the backbone of deterrence. Improvements in conventional weapons are good for increasing credibility, raising the nuclear threshold, and decreasing the dependency on the early use of nuclear weapons, but can't justify the renunciation of any category of nuclear weapons."

In addition, the introduction of advanced technology, precision-guided, conventional weapons and munitions in no way absolves the NATO forces of their obligation to provide forward deployed forces, the German official pointed out. Just as deterrence rests, *in extremis*, on the possible use of nuclear weapons, so does it require the certainty that an attacker will "meet not just German troops but allied forces." From the German point of view, he emphasized, "the principal task of defense is to hold the first echelon," meaning that "it's of no use to fight the second echelon if we can't hold the first. This must be [treated as] a two-way street from the beginning."

So far as the planned deployment of US ground-launched cruise missiles (GLCMs) and Pershing II ballistic theater weapons in Germany is concerned, he expressed "not the slightest doubt that we will be able to [do so] and the majority of Germans will accept this." While the German peace movement is a "loud minority" that can be counted on to orchestrate media-oriented protest extravaganzas, the deployment of modern theater nuclear weapons will take place beginning late this year if there is no arms-control accord before then.

The US negotiating stance at the Geneva talks so far has been "very reasonable," and every move is being coordinated closely with the NATO allies, he said. Predicting that the start of the US INF deployments would not preclude continuation of negotiations by the superpowers, the German Defense Minister questioned Soviet threats of drastic reprisals for such deployments: "The Soviets intentionally are not very precise [in terms of what] they will do if we deploy. . . . They try to intimidate and influence."

He suggested that the Politburo had decided to deploy SS-21, SS-22, and SS-23 nuclear-armed medium-range missiles—some of which are now stationed in East Germany—before NATO even agreed on positioning modernized INFs in Europe. While the Soviets try to portray these deployments as a "reaction" to pending NATO deployments, Minister Woerner suggested that whatever the West might field, or not field, would have no significant effect on Soviet weapon systems in the pipeline or planned for.

Minister Woerner declined to discuss his government's position on enhanced radiation/reduced blast weapons, the so-called neutron bombs, that are coming into the arsenals of both the US and French forces, other than to say that neither country has made any requests to station these weapons on German soil. There are no neutron weapons in his country now, and there is "no need to comment on hypothetical" developments in the future, he emphasized.

The German official was less reticent about German reactions if the US were to decide to cancel its MX program: "Some people in my country would then say that the Americans don't dare to station their missiles [in their sovereign heartland] and this would have a bad influence" on nuclear missile deployments in Europe.

Unexpected Support From Russia

The Summer '83 issue of *Foreign Affairs* magazine carried a copyrighted "Open Letter" by Andrei Sakharov, a distinguished Soviet physicist and Nobel Peace Prize-winner, currently in internal exile in Gorki. Although in part a moving appeal to the West to work for the prevention of nuclear war and its horrors, the Russian dissident's letter made a bold and cogent case for a US arms buildup to counter the Soviet threat.

Applauding the West's yearning for peace, Sakharov at the same time warned against "an *a priori* assumption of any special peace-loving nature in the socialist countries due to their supposed progressiveness or the horrors and losses they have experienced in war."

Counseling his readers to "take into account that, in the countries in the West, pro-Soviet propaganda has been conducted for quite a long time and is very goal-oriented and clever, and that pro-Soviet elements have penetrated many key positions, particularly in the mass media," he termed as typical "the history of the pacifist campaigns against the deployment of missiles in Europe." For public opinion in the West to assess global problems correctly, in particular the problems of strategic parity both in conventional and in nuclear weapons, he wrote, "a more objective approach, one which takes the real world strategic situation into account, is vitally needed."

Shifting to arms-reduction efforts, Sakharov suggested for these talks "to be successful, the West should have something that it can give up! The case of the 'Euromissiles' once again demonstrates how difficult it is to negotiate from a position of weakness. Only very recently has the USSR apparently ceased to insist on its unsubstantiated thesis that a rough nuclear parity now exists, and therefore everything should be left as is."

In recommending as a next step in the INF (intermediate-range nuclear forces) talks in Geneva a reduction of these missiles, he stressed that "what is absolutely at issue here is not moving the missiles beyond the Urals but *destroying* them. After all, rebasing is too 'reversible.'" The Russian dissident added yet another caveat: "Of course, one also must not consider powerful Soviet missiles [presumably the SS-20s], with mobile launchers and several warheads, as being the equal" of the US Army's aging shorter range, single-warhead Pershing I missiles, as suggested by Moscow for reasons of propaganda.

The problem posed by the Soviet Union's powerful silo-based missiles, in Sakharov's view, is no less important: "At present the USSR has a great advantage in this area. Perhaps talks about the limitation and reduction of these most destructive missiles could become easier if the United States were to have MX missiles, albeit only potentially (indeed that would be best of all)."

After describing in some detail the enormous lethality of large ICBMs, especially so far as the fifteen- to twenty-five-megaton warheads of the Soviet SS-18s are concerned, Sakharov termed it crucial to "strive for the abolition of powerful silo-based missiles at the talks on nuclear disarmament."

Asserting that for a variety of reasons, including the "tyranny of dictators," the world is "not at peace," Sakharov suggests that "when examining the general trends of events

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since 1945, there has been a relentless expansion of the Soviet sphere of influence—objectively, this is nothing but Soviet expansion on a world scale." This process, he pointed out, "has spread as the USSR has grown stronger economically (though that strength is one-sided) and in scientific, technological, and military terms, and has today assumed proportions dangerously harmful to international equilibrium. The West has grounds to worry that the world's sea routes, Arab oil, and uranium, diamonds, and other resources of South Africa are now threatened."

In an obvious and passionate reference to his own situation as the Soviet Union's most prominent dissident, Sakharov asserts that "citizens have the right to control their national leaders' decision-making in matters on which the fate of the world depends. But we don't even know how, or by whom, the decision to invade Afghanistan was made! People in our country do not even have a fraction of the information about events in the world which the citizens of the West have at their disposal.

"The opportunity to criticize the policy of one's national leaders in matters of war and peace, as you do so freely, is, in our country, entirely

IN FOCUS...

absent. Not only critical statements but those merely factual in nature, made on even much less important questions, often entail arrest and a long sentence of confinement or psychiatric prison."

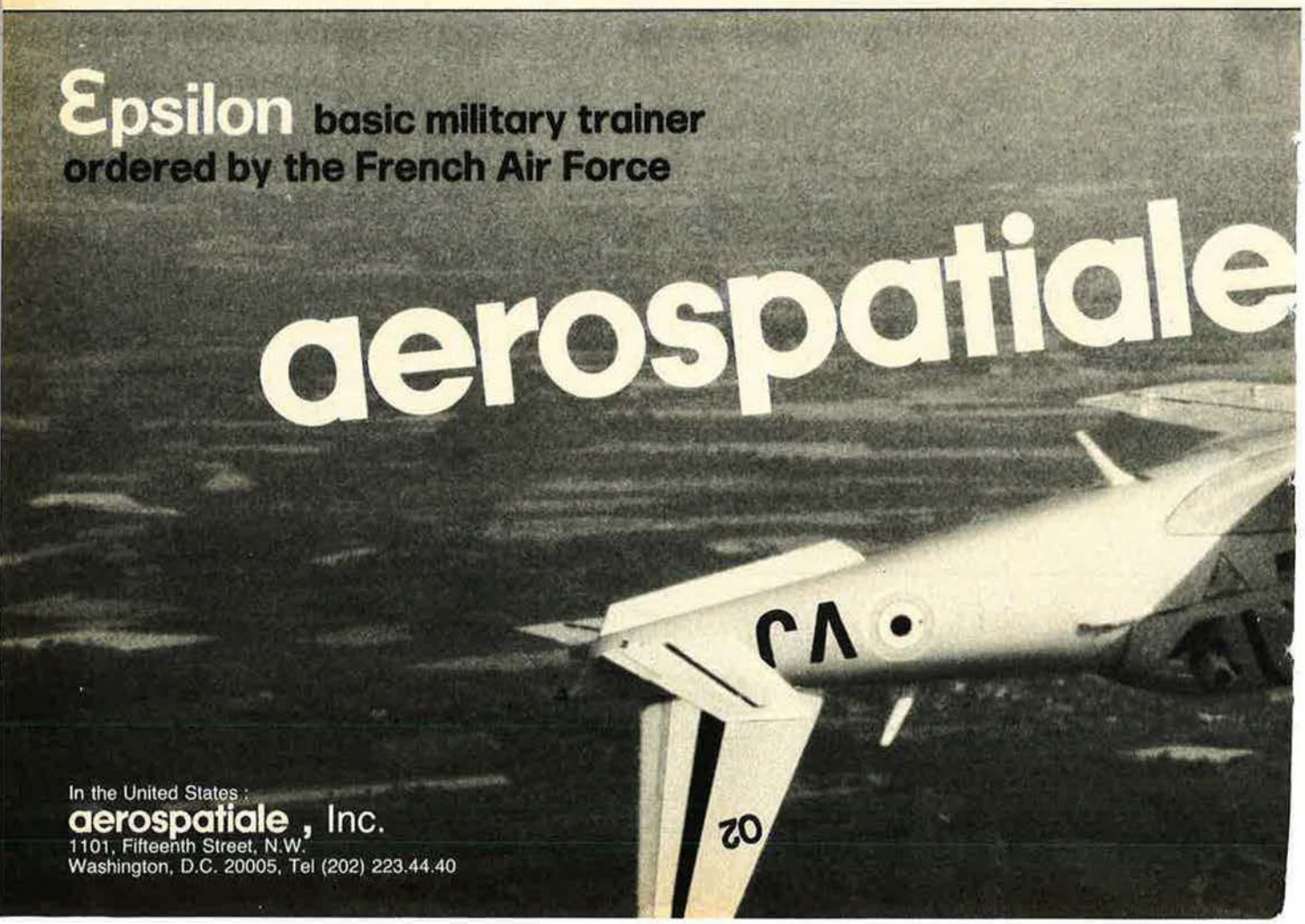
Clearly, his dramatic open letter speaks with the force and authority of personal experience.

Pentagon's Support of SICBM Reaffirmed

Deputy Secretary of Defense Paul Thayer told this writer at a recent press breakfast meeting that "the Pentagon has the message on the small ICBM." Media claims about "foot-dragging on the part of the Air Force or any other part of the Defense Department [are] simply not true," he said, adding that while all elements of the Pentagon solidly support the program, this "isn't going to prevent us from doing the analyses [to establish the best] tradeoffs." Decisions on the SICBM's specific configuration and features, he pointed out, can't be delegated to the political sector: "The country doesn't hold a commission responsible [for such technical details] but [holds] the Department of Defense and USAF [responsible]."

Secretary of Defense Caspar Weinberger similarly stressed at a press conference the "seriousness with which we approach the small missile program. We have asked for and allocated to it $600 million for 1984, and similar and increasing amounts for the subsequent years of the Five-Year Plan." Acknowledging that the technologies associated with such a small, single-warhead missile are not yet in hand, he expressed confidence that they can be developed and the SICBM put into the operational inventory "toward the end of this decade."

Commenting on a recent report by the Defense Department's Inspector General that unearthed instances of the Air Force and the other services having paid excessive prices for some spare parts, Secretary Thayer said that there appears to have been "negligence." Promising that corrective action will be "fast and immediate," he suggested that some of the large aerospace companies involved in filling very small spares orders at a high cost should have "refused the



order, simply because they are not geared" to produce economically small quantities of parts that have been out of production for some time.

Secretary Weinberger termed the spare parts problem a "very large one," involving yearly purchases as high as $13 billion, and asserted that "cost consciousness has to be—and is being—instilled in the personnel who are involved in the process." Other remedies the Defense Department is applying in addition to reprimands and other disciplinary actions include greater competition and the elimination of contracts that in effect enable manufacturers and suppliers to set their "own price," according to Secretary Weinberger. In extreme cases, he warned, the Defense Department won't shy away from disqualifying, meaning refusal to do further business with suppliers found guilty of outright violations or extremely bad judgment.

Washington Observations

★ The Air Force Weapons Laboratory's NKC-135 aircraft modified for laser weapons research and known as ALL (Airborne Laser Laboratory) recently successfully defeated a number of AIM-9 Sidewinder air-to-air missiles launched against it. The trouble-plagued program is to be terminated this year. Whether the recent successes will cause the Pentagon to extend this program or initiate a new approach based on a larger, wide-body platform later on is not yet clear.

★ The US Senate recently voted overwhelmingly for an amendment that precludes the Air Force from testing ASAT (antisatellite) weapons using either explosive or dynamic kill mechanisms in space unless a number of arms-control criteria are met. This prohibition applies unless "the President determines and certifies to the Congress that the United States is endeavoring, in good faith, to negotiate with the Soviet Union a mutual and verifiable ban on antisatellite weapons; and that pending agreement on such a ban, testing of explosive or inert antisatellite warheads against objects in space by the United States is necessary to avert clear and irrevocable harm to the national interest."

Defense experts in the Administration are somewhat disturbed by this amendment presented by Sen. Paul Tsongas (D-Mass.). For one, the central tenet of this country's space policy—shaped and concurred in by both Republican and Democratic administrations—is free access to space by all nations, including, of course, the US. Without an operational US ASAT, this country has no way of enforcing "free access" or, conversely, deterring others from denying such access. Also, the Soviet Union already has an operational ASAT capability, based on modified SS-9 ICBMs.

Lastly, ASAT verification is probably impossible, especially if the Soviets were to resort to "space mines," innocent-looking spacecraft that in fellow-traveler fashion co-orbit with their intended victims. The same is true if the Soviets were to use ground-based laser systems to put US satellites out of commission or modify ICBMs to detonate nuclear warheads in space.

★ JCS Chairman Gen. John Vessey told Congress recently that the Soviets last year fielded about 1,200 nuclear warheads that in terms of "quality" equal those carried by the MX. In the main, he said, that was achieved by modernization of the SS-18 and SS-19 ICBM force. This number, General Vessey explained, is greater than the total number of warheads to be carried by the 100 MX missiles that the Air Force plans to deploy. ■

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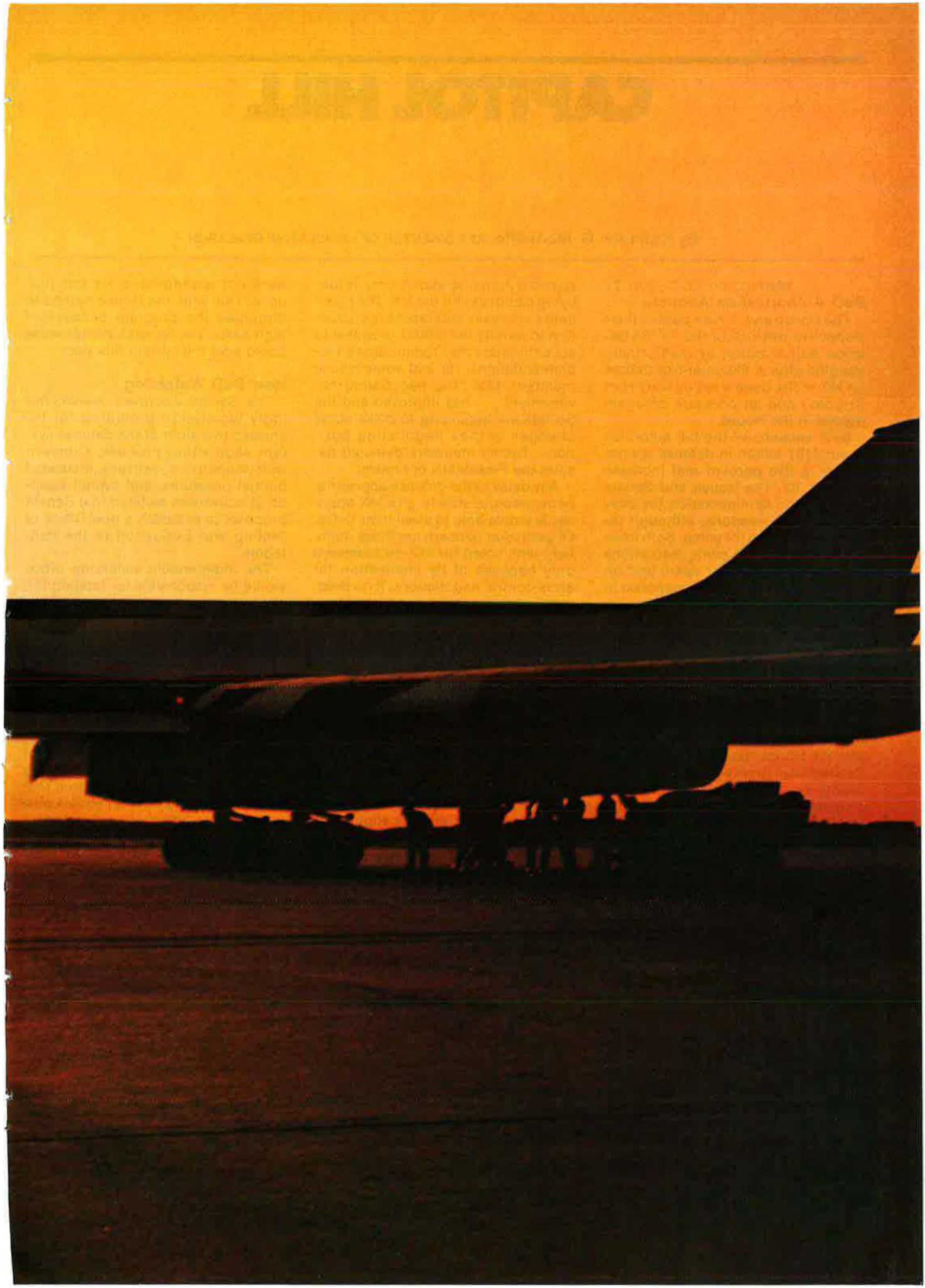

CAPITOL HILL

By Kathleen G. McAuliffe, AFA DIRECTOR OF LEGISLATIVE RESEARCH

Washington, D. C., July 27

DoD Authorization Adopted

The House and Senate passed their respective versions of the FY '84 Defense Authorization by comfortable margins after a filibuster-like debate on MX in the Senate led by Gary Hart (D-Colo.) and an on-again off-again debate in the House.

Both versions of the bill authorize about $187 billion in defense spending, or a five percent real increase over FY '83. The House and Senate bills give the Administration the okay on all major weapons, although reducing spending for some. Both measures also include some restrictions on price increases for spare and repair parts, which came in response to a DoD Inspector General's report outlining millions of dollars overpaid by DoD to contractors for replacement parts.

Differences in the two bills will have to be settled in an upcoming conference. Major issues for conferees will be funds for binary chemical munitions approved only in the Senate, and the House reduction of MX production from twenty-seven missiles to twenty-one and linkage of their deployment to development of the small, single-warhead missile.

Final passage in the House prior to the August recess surprised many in Congress and the Pentagon since the House Democratic leadership decided earlier to postpone final passage until sometime in September. The purpose was allegedly to get the Administration to yield on domestic spending in exchange for approval of defense increases.

MX Outlook

The thirteen-vote margin of victory in the House for MX procurement funds in the FY '84 Defense authorization does not bode well for approval of the actual money for the missile when the appropriations bill is debated later this year. The erosion of support from the bipartisan coalition that supported the President's endorsement of the Scowcroft Commission's recommendations on strategic forces only two months earlier occurred despite the Administration's intense lobbying campaign for the MX. The President personally reiterated his instruction to modify the START proposal to accommodate the Commission's recommendations. He told some House members that "the negotiating environment . . . has improved and the Soviets are beginning to make some changes in their negotiating position." Twenty members defected despite the President's optimism.

Any delay of the defense appropriations measure should give MX opponents ample time to swell their ranks. Of particular concern are those members who voted for MX procurement only because of its implication for arms-control negotiations. If no progress is evident in Geneva by the time the appropriations bill is debated, these lukewarm supporters could switch their votes in an attempt to force the Administration to make further concessions at START. This could make MX a sure loser in the House.

LANTIRN Alternatives

The Senate warned the Air Force that it must develop alternatives to its LANTIRN (Low-Altitude Navigation and Targeting Infrared for Night) system in the event that program is terminated. While approving the USAF request for LANTIRN development funds, the Senate Armed Services Committee linked continued support to USAF efforts to provide viable alternatives. Any alternative program would have to meet all night and under-the-weather strike and interdiction requirements. The alternatives are to be funded initially with at least $20 million in FY '83 money reprogrammed from lower-priority tactical systems.

The call for alternatives is due to the cost growth incurred by LANTIRN. Independent USAF analyses suggest that the costs could go still higher. The Air Force views LANTIRN as a high-priority tactical program well worth the price.

Last year the Air Force was directed to compete LANTIRN against the Navy's F/A-18 FLIR system, but funds were not appropriated for this purpose. This year, the House agreed to terminate the program because of high costs. The Senate's compromise could save the system this year.

New DoD Watchdog

The Senate approved overwhelmingly legislation providing for increased oversight of the defense system acquisition process. Concern with weapon cost overruns, increased budget pressures, and overall weapon effectiveness resulted in a Senate proposal to establish a new Office of Testing and Evaluation in the Pentagon.

The independent watchdog office would be responsible for judging the effectiveness of new weapons before they enter production. The director of the testing office would report directly to the Secretary of Defense and respond to specific congressional requests. Currently, operational testing of new weapons is tied closely to the DoD office charged with developing and procuring new systems. Many in Congress viewed this as a potential conflict of interest. The new testing director would be separate from that office and would have an equal voice in deciding whether to buy a weapon.

Comprehensive Review of DoD

The Senate Armed Services Committee is beginning an in-depth review of the structure, organization, and decision-making procedures at the Pentagon. A series of hearings is designed to determine whether the Pentagon is effective in formulating and implementing sound national security policy. The review will focus on the Joint Chiefs of Staff organization, the effectiveness of the unified commands, decision-making in specific areas, and the ability of the Office of the Secretary of Defense, as currently structured, to manage DoD's overall efforts. Committee Chairman Sen. John Tower (R-Tex.) expects the oversight effort to result in legislation recommending some changes or the establishment of an independent commission to study DoD organization and structure. ■

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AEROSPACE WORLD
News, Views & Comments

By William P. Schlitz, SENIOR EDITOR

Washington, D. C., August 5

★ The Air Force recently completed a study entitled *Air Reserve Forces 2000*. Part of the long-range planning process, the document assesses the relationships that will exist among the ANG, AFRES, and the active force in the year 2000, and examines the appropriate roles and missions for the Air Reserve Forces (ARF).

The study builds on and complements the work done in 1982's *Air Force 2000*. The fundamental premise of the study is that the US has entered a period of profound political, economic, and technological change calling for adjustments within the military establishment. *Air Reserve Forces 2000* attempts to put the ARF's missions in perspective, with the goal of increasing USAF's warfighting capability to the year 2000. The study makes these principal points:

- The "Total Force" policy will endure. This requires the ARF to be prepared to field combat-ready units on short notice, and to assume major roles in the event of war or emergencies. Air Force planners, since the early 1970s, have relied increasingly on the ARF to augment the active Air Force.
- The modernization of ARF equipment should continue to ensure combat readiness, but limited resources may slow the pace of modernization. Present force modernization priorities—forward deployed forces first, followed by early deployers, etc.—will be maintained.
- As in the past, certain missions will be more appropriate for the Guard and Reserve than others. For example, the study lists strategic airlift as a very appropriate ARF mission, fighter/attack as moderately appropriate, tactical reconnaissance as somewhat appropriate, and strategic bombing as least appropriate.

The study concludes that a suitable balance must be maintained between the active and Air Reserve Forces, and that changes in missions or force mix should be considered carefully.

The Joint Chiefs of Staff pose for an informal portrait. They are, from left, Gen. John A. Wickham, Jr., US Army; Gen. Charles A. Gabriel, US Air Force; Adm. James D. Watkins, US Navy; Gen. John W. Vessey, Jr., US Army, and Chairman of the JCS; and Gen. Paul X. Kelley, US Marine Corps. (Official Department of Defense photo by R. D. Ward)

★ Moving into the big numbers: In July, ceremonies were conducted at the General Dynamics facility at Fort Worth, Tex., to mark delivery of the 1,000th F-16 Fighting Falcon.

The milestone aircraft is to be assigned to the 388th Tactical Fighter Wing at Hill AFB, Utah. That unit received the first operational Falcon in January 1979.

Noted Maj. Gen. George L. Monahan, Jr., F-16 Program Director, "This has been a program of firsts: the first government multiyear buy, the first major international coproduction program, and the first technology modernization program."

Among foreign nations flying the F-16, Venezuela is to receive its first later this year and the Republic of Korea in 1986. More than 600 Falcons have been delivered to USAF, with the aircraft being produced at a rate of more than fifteen per month. ANG and AFRES are to begin receiving F-16s this year.

In a related military aircraft matter, the 1,000th engine for the Sikorsky UH-60A Black Hawk helicopter was recently delivered to the US Army. "This engine's trouble-free performance in the field has been proven in more than 300,000 flight hours," according to General Electric, the manufacturer.

The T700 also powers the Navy's Seahawk, the Army's Apache, and the Air Force's Night Hawk helicopters, the last being designed for a search-and-rescue role, among other missions.

The External Stores Support System (ESSS) for the Army's Black Hawk achieved a major milestone recently when an ESSS-equipped UH-60A made a nonstop, 1,355-nautical-mile flight from the Stratford, Conn., plant to Fort Rucker in Alabama.

Equipped with four auxiliary fuel tanks, the aircraft was flown by an Army crew to Alabama in twelve hours. According to officials, about

1,000 pounds of fuel remained in the Black Hawk's main tanks, confirming that the ESSS will permit deployment over extended ranges.

Sikorsky's ESSS kit consists of removable pylons on both sides of the fuselage which can be installed by four people in less than forty minutes. After August, all UH-60s rolling off the assembly line will have provisions to accept the kit.

When fully qualified, the ESSS and auxiliary tanks will permit the UH-60 to fly from CONUS to Europe. The ESSS also will give the aircraft capability to carry weapon pods, rockets, electronic countermeasures pods, and scout motorcycles without compromising cabin space, officials added.

★ Construction has begun on Air University's War Gaming Center at Maxwell AFB, Ala. Completion is slated for January 1985.

The War Gaming Center is one of three components of the Center for Aerospace Doctrine, Research, and Education (CADRE), the newest AU organization that became operational earlier in the year.

CADRE's mission is to develop concepts and strategy related to airpower. Its other components are the Airpower Research Institute and the Air University Press.

When in operation, the War Gaming Center will have at its core the Command Readiness Exercise System (CRES), a comprehensive computer-assisted war gaming system that is under development to educate current and future senior officers in combat decision-making.

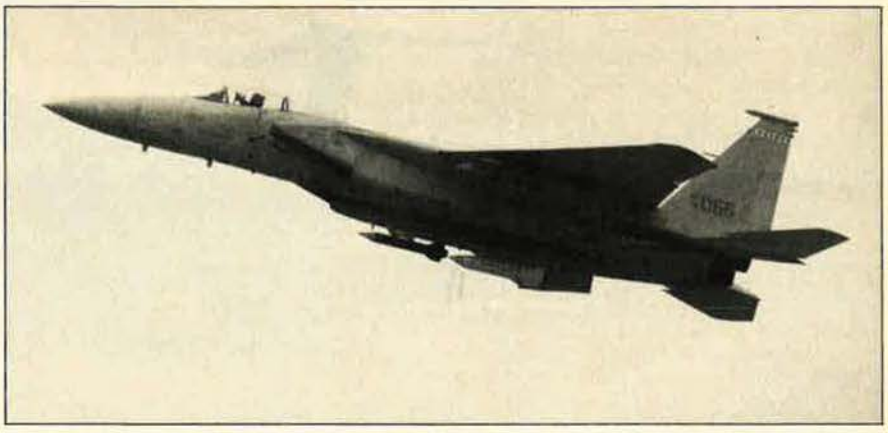
CRES will take seven years to bring into operation at an estimated cost of $63 million.

CRES is being developed in three phases. Phase I, to be concluded in September 1985, provides war gaming and other exercises in direct support of Air Force professional military education at AU. Phase II, to be ready in 1987, will link the Air War College to DoD and the Army and Navy war gaming centers for joint exercises. Phase III will add real-world operational war gaming for Air Force combat commands and related agencies.

CRES is being designed to use real-world data bases in war games involving a variety of scenarios, force structures, and levels of intensity ranging from local crises to global conflict, officials noted.

One objective of CRES is to improve joint planning and operations among the three services, while helping officers of each to understand the doctrine and strategy of the others.

In ceremonies in July, General Dynamics delivered the 1,000th F-16 Fighting Falcon to USAF, shown here being put through its paces. See adjacent item.



During a recent test, an F-15 from the 3246th Test Wing carried the first operational Aerial Gunnery Target System to a Gulf of Mexico range. See item below.

★ The first operational Aerial Gunnery Target System (AGTS), developed by the Directorate of Aerial Targets, Eglin AFB, Fla., has been deployed to the 49th Tactical Fighter Wing at Holloman AFB, N. M.

The new target will provide a cost-effective tow target system for gunnery practice.

Some 1,015 targets are to be delivered to USAF under a $9 million contract with Teledyne Brown Engineer-

Designed to destroy enemy armor, a GPU-5/A Gun Pod is mounted on an F-4 Phantom at Moody AFB, Ga. The pod gives tactical aircraft other than the A-10 tank-killing capability.

AEROSPACE WORLD

ing, Huntsville, Ala. The AGTS will also be used to evaluate the technical capability and combat effectiveness of air-to-air systems using 20-mm guns, officials said.

The AGTS is designed to be carried on the F-4 Phantom, F-16 Fighting Falcon, and F-15 Eagle, which is the fighter flown by the 49th. The target can be towed at speeds up to Mach 0.95 at altitudes up to 35,000 feet, and is capable of maneuvers of minus 1.0 G to plus 5.0 G. Each target can be reused an average of three times.

Until this deployment, the only other operational gunnery target system had been the TDU-10B Dart. This system, developed in the 1950s, does not meet the current air-to-air fighter requirements with respect to target size, speed, maneuverability, survivability, and real-time scoring, officials noted.

"There are two main components to the AGTS," noted 1st Lt. Marty Horniak, program manager. "The tow cable container holds 1,600 feet of nylon cable, and the target set contains a visual augmentation device and the acoustical scoring system."

Upon release of the target, noted Lieutenant Horniak, the target set pulls the tow cable out of its container. When the cable is fully released, the target set deploys the visual augmenter and is ready for the gunnery passes.

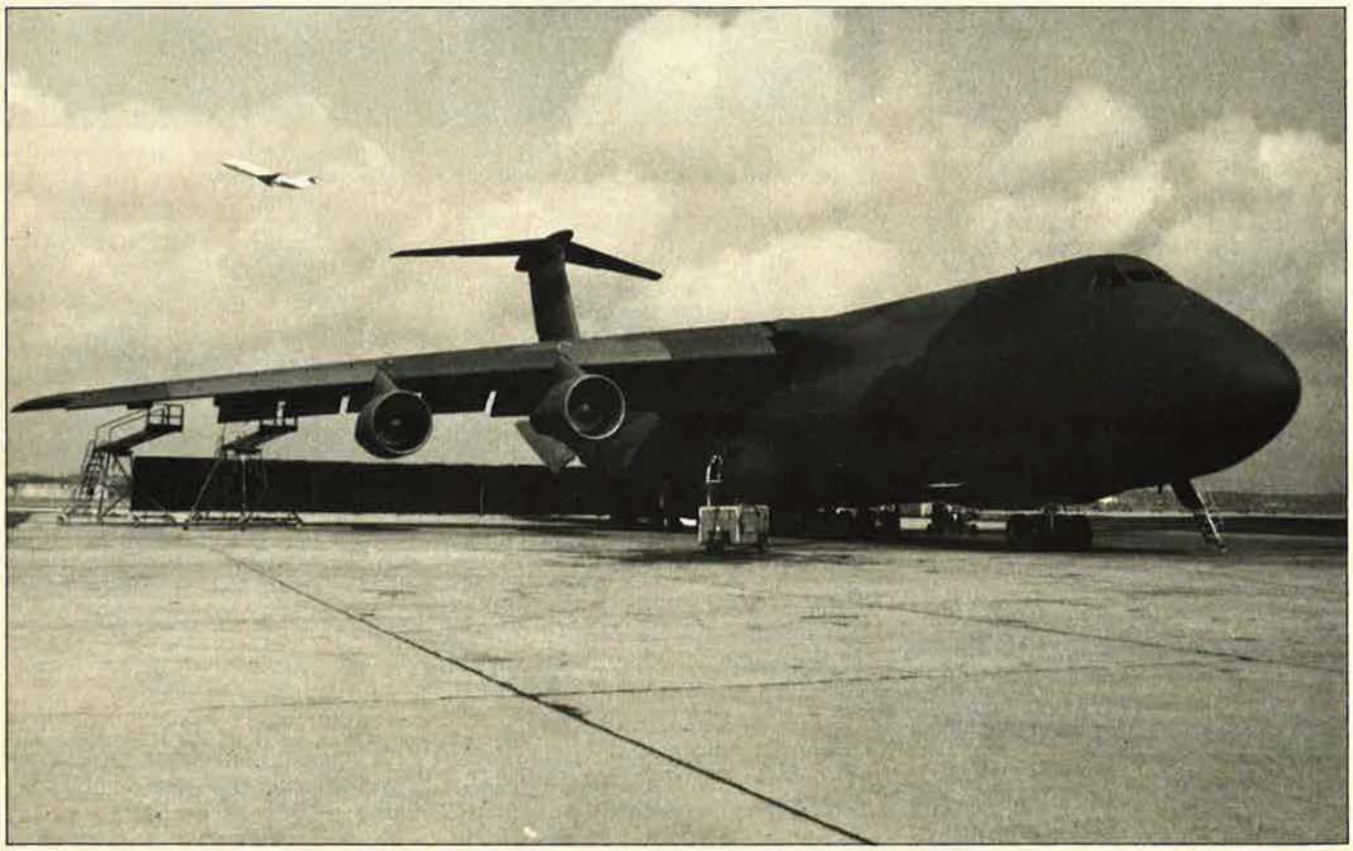
"When an aircraft fires at the target," explained the Lieutenant, "the 20-mm rounds pass through an acoustical scoring field. Each round that enters the field is detected by the scoring system's microphone and the bullet count is transmitted to a cockpit display unit in the tow aircraft." Results of the count are read by the the tow pilot and the results are radioed to the shooter, giving real-time feedback. When the mission is completed, the target is released over a land range and recovered.

Later this year, the AGTS will be deployed to Air Force units at Camp New Amsterdam, the Netherlands; Decimomannu AB, Italy; Zaragoza AB, Spain; Incirlik AB, Turkey; and Elmendorf AFB, Alaska.

★ AFRES plans to activate an A-10 training squadron at the 917th Tactical Fighter Group at Barksdale AFB, La., this fall.

Designated the 46th Tactical Fighter Training Squadron, it will provide A-10 training for Air Force Reserve forces.

Currently, instructor pilots in the A-10 training schools are also mission-ready pilots in the 47th Tactical Fighter Squadron at Barksdale. With the activation of the new squadron,



The Air Force has embarked on a program to give its fleet of C-5s a new look—the grays and greens of the European 1 paint scheme. Purpose of the new paint job other than camouflage is to provide corrosion protection.

The Thunderbirds and the F-16s:
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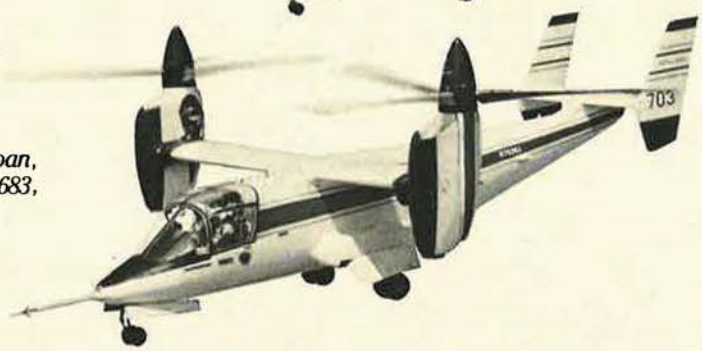

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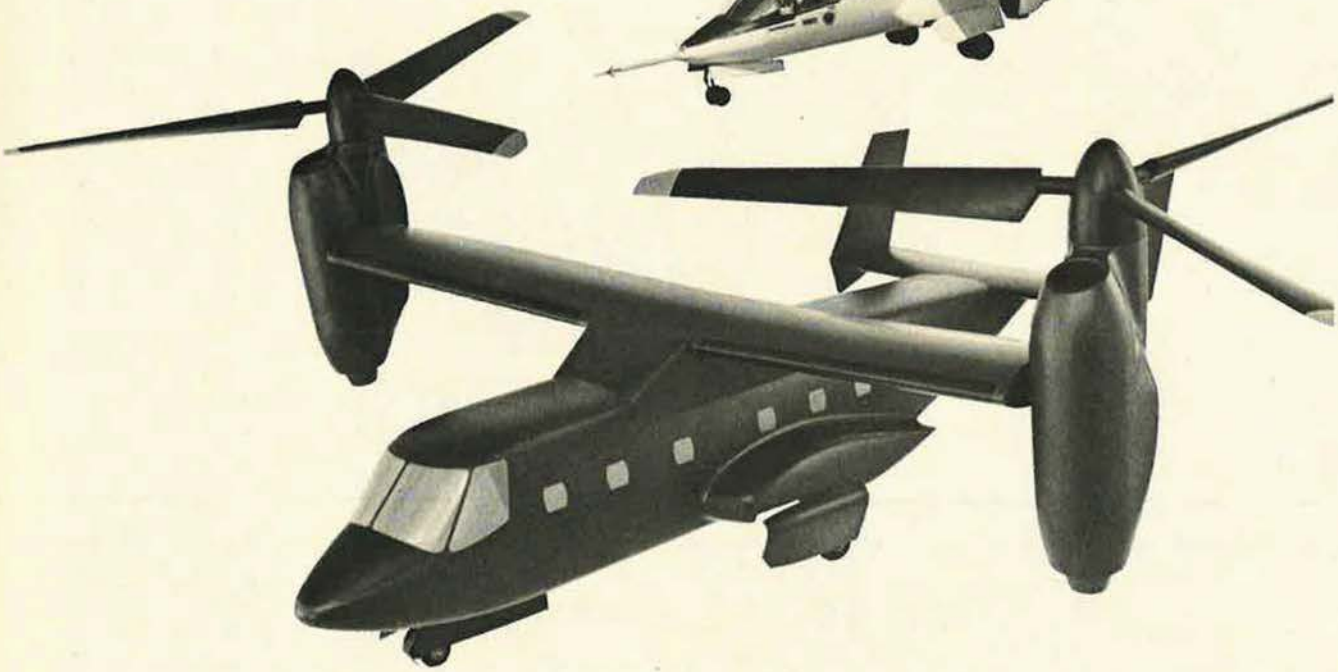
For more information, write to W. C. Sloan, Bell-Boeing Joint Program Office, Dept. 683, Box 482, Ft. Worth, Texas 76101 USA.



JVX . . . WITHIN REACH

AFRES will have an eighteen-aircraft tactical fighter training squadron to train all ANG and AFRES pilots independent of the fighter squadron.

Planned training for FY '84 includes "long-course" training for fifteen Guard, two Reserve, and four active-duty undergraduate pilot training graduates. A-10 training will also be provided for experienced fighter pilots joining the A-10 units.

When the 46th TFTS is activated, three squadrons with World War II backgrounds will be united under the 434th Tactical Fighter Wing: The 45th TFS at Grissom AFB, Ind., and the 46th and 47th TFS. These units saw action together in the Pacific.

★ In another AFRES matter, to bolster readiness USAF will expand the base individual mobilization augmentee administrator (BIMAA) program to twenty-six bases in FY '84.

Officials at the Air Force Manpower and Personnel Center at Randolph AFB, Tex., said the program, which began in 1981, now has ten bases served by BIMAAs. These are Reservists with personnel experience who serve three-year active-duty tours as focal points for the IMA program. IMAs are trained AFRES members who replace or increase active-duty forces during wartime.

AEROSPACE WORLD

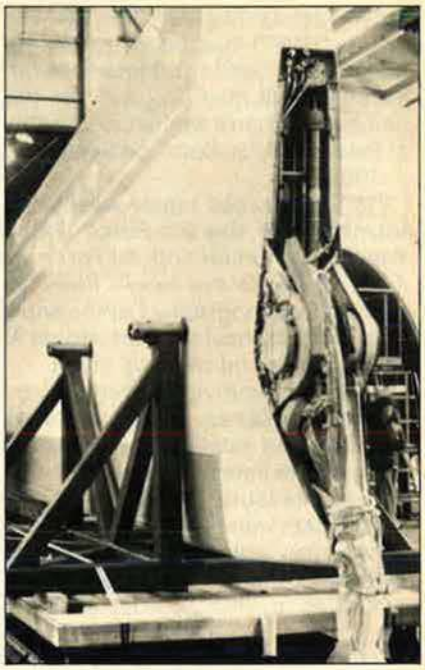
BIMAAs work for chiefs of base personnel offices. Their main functions are to educate commanders, supervisors, and other key personnel on the IMA program; improve base-level IMA administration; and ensure that units have notification plans to recall IMAs for mobilization.

Six bases are scheduled to add BIMAAs beginning October 1, 1983: Hanscom AFB, Mass.; Travis and March AFBs, Calif.; Andrews AFB, Md.; Los Angeles AFS, Calif.; and McChord AFB, Wash.

Tentative locations for May 1, 1984: Bolling AFB, D. C.; Eglin AFB, Fla.; Patrick AFB, Fla.; Shaw AFB, S. C.; Seymour Johnson AFB, N. C.; Edwards AFB, Calif.; Griffiss AFB, N. Y.; Peterson AFB, Colo.; Maxwell AFB, Ala.; and the 1947th Administrative Support Group at the Pentagon.

★ Space Command has taken over operation of DoD's global weather satellite system.

Responsibility for operating the De-



Under a NASA/USAF program, ground testing of the Mission Adaptive Wing aboard the Advanced Fighter Technology Integration F-111 test-bed is to begin this fall at Edwards AFB, Calif. The wing, constructed by Boeing, has no outer surfaces such as flaps to break its smooth contour but will use internal mechanisms to change its shape in flight, a radical departure from conventional designs.

"Langley North"—A Total Success

Deployment is a word heard often in Tactical Air Command. Most TAC wings deploy parts of a unit to a distant location to prove readiness of people and equipment.

But moving an entire wing some 900 miles for more than a month? That's a real test of mobility capabilities.

The 1st Tactical Fighter Wing, Langley AFB, Va., put itself to that test recently. From the middle of March through the first week of May, the wing deployed to the field training site at Phelps Collins ANGB, west of Alpena, Mich., which became known to the wing as "Langley North."

The wing deployed while the main runway at Langley was replaced. Having been patched repeatedly over the years, the runway was beyond the point where mere patching could do the job.

That "fix" caused some fifty-eight F-15 Eagle aircraft and more than 1,300 operations, maintenance, and support personnel to be deployed.

"Logistically, a move of this size and duration looked like a nightmare," said Lt. Col. Joe Coleman, assistant resource manager. "But we treated it as a regular mobility deployment," he said. "As such, our procedures were well defined and our whole operation worked like clockwork. MAC gave us a hand by providing airlift control teams, and our own mobility and transportation people pitched in to make it all work," he added.

Operationally, the move came off like clockwork. Fifty-eight F-15s left Langley on March 28 for the flight to Phelps Collins. The jets were grouped in flights of four and arrived all through the day.

The first flight of four was led by Vice Wing Commander Col. Robert Wagner and included the Commander of the 71st Tactical Fighter Squadron, Lt. Col. Ross Smith.

Colonel Wagner had words of praise for the thirty-four-person advance party and their preparations for the arrival of the jets. "Our advon did a super job in preparing the base for our deployment," he said. "I salute them and I'm proud of the work they've done."

Col. Jim Rousey, 1st Combat Support Group Deputy Commander, was in charge of the advance buildup. His job included preparation of barracks and the dining halls. Additionally, he made sure all ramp and taxiway facilities were ready for use.

"The combat support group folks had to put in long hours to prepare for the F-15s, but everyone gave 110 percent," Colonel Rousey said.

After beddown, the wing flew its normal sixty to sixty-five sorties a day, proving that it was up to its high standards even far from home.

MAC provided twice-a-week support airlift, bringing in everything from parts to parcels. While operations continued at a normal pace in Alpena, contractors worked day and night through all types of weather to complete the runway at Langley. The eastern Virginia weather did its best to hamper construction operations, but runway work was completed on time.

The wing returned to Langley May 5, led by Wing Commander Col. Henry Viccellio, to the cheers of happy family members and coworkers. Col. Barton Crews, runway closure project director, summed up the deployment best: "From the first site survey in December to the last returning cargo aircraft, the Alpena deployment was an outstanding effort by everyone in the wing.

"The most impressive thing was that job descriptions didn't matter. Everyone did everything. That's what made the project go so well. Chalk up another first for the 1st!" Colonel Crews said.

—BY 2D LT. RON LOVAS, USAF

fense Meteorological Satellite Program (DMSP) has been transferred from SAC to Space Command as part of the overall mission given the new command when it went into operation at Peterson AFB, Colo., on September 1, 1982.

DMSP provides timely weather information to the Air Force Global Weather Center for both Air Force and Army users, to the Navy's Fleet Numerical Oceanography Center, and to worldwide tactical readout sites at Air Force bases and on Navy ships.

The system provides advance warning of hurricanes, tornadoes, snow, and fog. The satellites carry sensors that provide images of clouds at night or day, measure temperatures, and even detect water vapor. Each satellite views every point on the earth's surface twice a day and can distinguish clouds as small as 2,000 feet in diameter.

The program includes the Satellite Operations Center at Offutt AFB, Neb., and two command readout stations—one at Fairchild AFB, Wash., and one at Loring AFB, Me.

★ Ground has been broken for construction of a new Space Transportation System (Space Shuttle) facility that will save millions of tax dollars on each STS Orbiter flight, officials at Vandenberg AFB, Calif., announced.

Called the Solid Rocket Retrieval and Disassembly Facility, the $10.5 million project will pay for itself many times over, said officials who estimate a saving of $32 million per Orbiter flight. Scheduled for completion in July 1984, the new building at Port Hueneme, Calif., is the last major West Coast facility currently planned for the STS program.

The SRRD facility will make possible the reuse of the Orbiter's 149-foot solid rocket boosters.

After liftoff, the Shuttle's expended rocket boosters separate and drop back for a water landing some 100 miles off the Pacific coast.

Tugboats will retrieve the boosters and tow them back to Port Hueneme where they will be delivered to the SRRD facility. The boosters will then be disassembled, cleaned, and shipped back to their manufacturer for refurbishment and refueling. Reusable parachutes are also sent back to the Kennedy Space Center in Florida for repacking.

Refurbishment of solid rocket boosters will cost $18 million per Orbiter flight as opposed to buying new boosters at a price of $50 million per flight, officials said.

★ The Federal Aviation Administration is taking steps to blunt criticism that it has been indifferent to the hazards of post-crash fires in airliner cabins.

Recently at its Technical Center at Atlantic City, N. J., FAA demonstrated several techniques being developed to deal with blazes that follow survivable crashes.

At a Technical Center test facility, what would ordinarily have been a fatal fireball following a crash was retarded by a promising chemical fuel additive. In another demonstration, a seat constructed of fire-preventive materials resisted the effects of a blowtorch while a conventional seat was reduced to a smoldering mass when subjected to the same treatment.

Also demonstrating how fires could be quickly snuffed out were the recently perfected Halon fire extinguishers that have become standard equipment aboard most American airliners.

In conjunction with the demonstra-

AEROSPACE WORLD

Northrop Corp.'s Mach-2 class F-20 Tigershark demonstrates the power of its 17,000-pound-thrust GE F404 low bypass turbofan engine. The nighttime test took place recently at Edwards AFB, Calif., where the aircraft is being developed with company funds.

Explosives Unit's New Protective Gear

The 7006th Explosive Ordnance Disposal Flight at Kapaun AS near Ramstein AB in Germany recently received some new equipment unique to EOD units.

According to Capt. Joseph R. Schuler, flight Commander: "The new bomb suits were made in Switzerland and can be connected to communications gear. This enables us to keep a link with the EOD specialist working on site with an explosive device.

"If something unusual were to happen or if that specialist doesn't have a great deal of experience, the specialist would have the expertise of other EOD technicians to help out," Captain Schuler said matter of factly of what could be a very interesting situation.

"All information given via the communication hookup is recorded. This is extremely important if we use an explosive technique to detonate the device. This may destroy the evidence needed by the Office of Special Investigations. We can give the tape recording to the OSI officials for their investigation of the incident," he added.

"Since working on explosives is a high-stress situation, the technician may not be able to recall everything seen at the time. With the tape recording, on-site observations can be made and preserved," the Captain noted.

"Besides the fact that the suit offers a communications link, it also gives excellent protection to EOD personnel if a device detonates," he continued.

The new EOD suit weighs almost fifty pounds (25 kg) and, according to SrA. Jon E. Prudhom, an EOD specialist, "It gets extremely warm and heavy but the discomfort is offset by the fact that it could save your life."

In addition to the bomb suits, the flight has a bomb blanket "that is used in a high-risk area to protect a resource we can't afford to lose," noted Captain Schuler. "For example, for an explosive in a computer room, we would use the blanket to cover the device to contain the detonation and fragmentation. There are other bomb blankets but this is the first we've seen with certain qualities," the Captain explained.

The unit is awaiting another piece of equipment that will be a first in US Air Force units. "The most sophisticated piece of equipment the 7006th will soon be using is called a 'British wheelbarrow,'" according to the EOD chief. "It is a radio-controlled robot equipped with television cameras. The robot will be used to approach a device, and with the camera we will be able to determine the proper course of action to dispose of the explosive.

"This will enable the technician to eliminate the hazard without getting close to the device. It will save lives, and in this job that's the name of the game," Captain Schuler concluded.

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tions, FAA Administrator J. Lynn Helms, a former test pilot, noted that he intends to propose a new list of safety regulations in the next eighteen months. "I think there is no question that these will constitute perhaps the most dramatic single step forward in airplane safety in a quarter century," he added.

Mr. Helms indicated that FAA was devoting particular attention to the phenomenon called "flashover," in which a blaze engulfs an airliner cabin. Besides fire, flashover quickly eats up the available oxygen.

Previously, the agency focused on the generation of smoke and toxicity in cabin fires. This shift in direction came about because of FAA's ability to conduct full-scale cabin fire tests, Mr. Helms noted. Smoke and toxicity follow flashover, FAA technicians have learned.

Other avenues being pursued are flame-resistant ceilings, wall panels, and bulkheads. Improved emergency lighting systems are also being developed, Mr. Helms added.

AEROSPACE WORLD

★ The Air Force has awarded a contract to Gulfstream Aerospace Corp., Savannah, Ga., for the C-140B aircraft replacement program. Andrews AFB, Md., is to receive one Gulfstream III in mid-September and two more in October. The aircraft will receive the designation C-20A.

Under the contract, USAF will lease the three special air mission (SAM) aircraft assigned to Andrews's 89th

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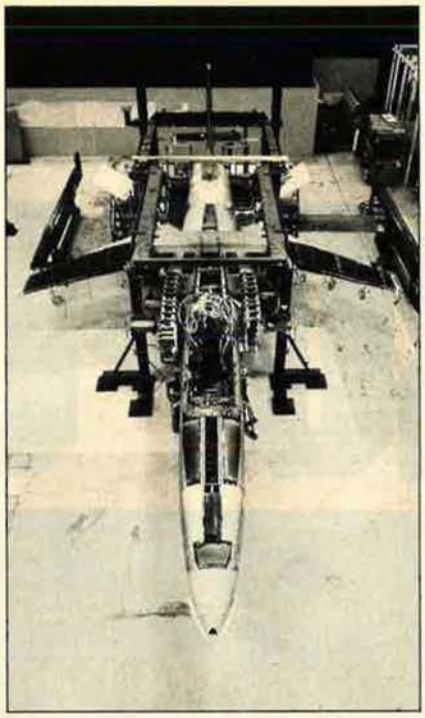

Forward-swept wings built of advanced composite materials have been mated to the fuselage of the X-29A technology demonstrator aircraft at the Grumman Aerospace facility in Bethpage, N. Y. It is the first of two aircraft being built to test the unconventional design concept. Rollout of the first aircraft is scheduled for later this year.

Military Airlift Wing with options to buy in FY '85. The contract also provides options for the purchase of eight additional aircraft through FY '88 to replace the other C-140Bs at Andrews and at Ramstein AB in Germany.

Gulfstream Aerospace is to provide logistic support at Andrews and at Ramstein, where the C-20As will continue the role of operational support airlift.

★ **NEWS NOTE**—The last **two dozen military air traffic controllers (all Air Force)** deployed to augment FAA facilities following the August 1981 walkout of civilian controllers have returned to their units. Over nearly two years, some 1,024 controllers from the four services helped support the nation's air transportation system.

Died: Famed American balloonist **Maxie Anderson** and his copilot **Don Ida** in a crash in July in Bavaria, Germany. Both were forty-nine. Mr. Anderson was the leader of a three-man team that completed the first transatlantic balloon crossing in 1978. He failed in three attempts to circle the globe by balloon, the last in November 1982 when he and Mr. Ida flew from Egypt to India and were downed by mechanical problems. Mr. Anderson also made the first nonstop balloon crossing of the US.

Died: Herman Kahn, a leading US theorist on nuclear strategies who founded the Hudson Institute, of a heart attack in July at Chappaqua, N. Y. He was sixty-one.

Died: Maj. Robert A. Lewis, Sr., USAF (Ret.), copilot of the *Enola Gay* during the bombing of Hiroshima, in Virginia in June. The former AFA member was sixty-five.

Died: Brig. Gen. Don Z. Zimmerman, USAF (Ret.), a 1929 West Point graduate who was first Director of Weather for the Army Air Corps, first Dean of Faculty at the Air Force Academy, and a member of the early high-level Advanced Study Group, in Washington state in May. The long-time AFA member was buried at the Academy. He was seventy-nine. ■

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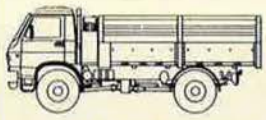
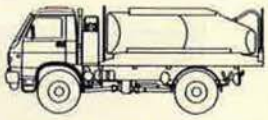
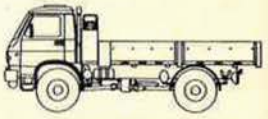

CARGO TRANSPORT


WATER/POL TRANSPORT


MULTI-PURPOSE FLAT BED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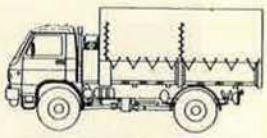
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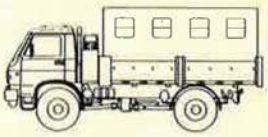
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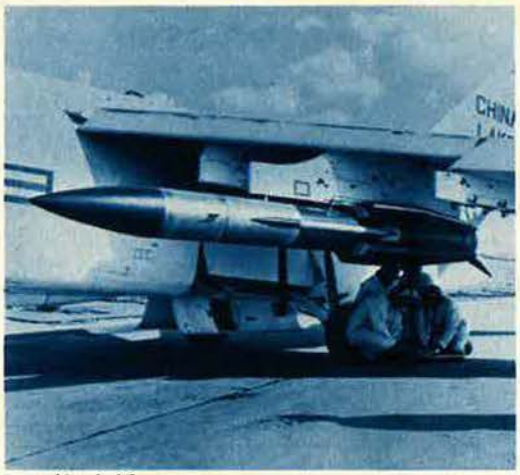
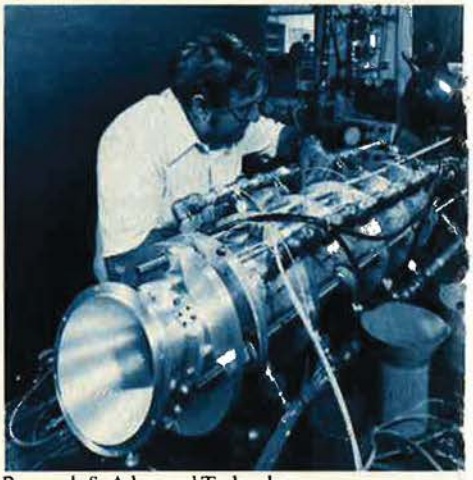


Liquid Fueled Ramjets

Space Boosters

Tactical System Motors



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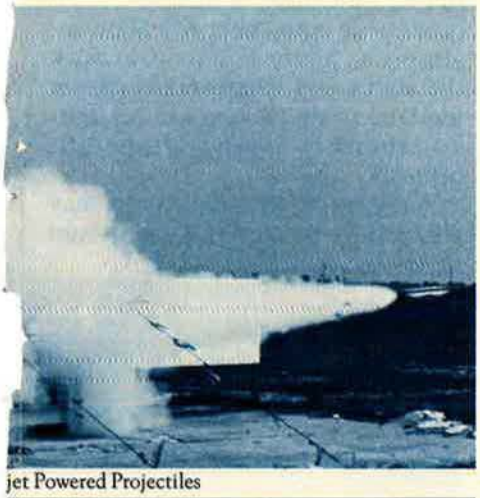
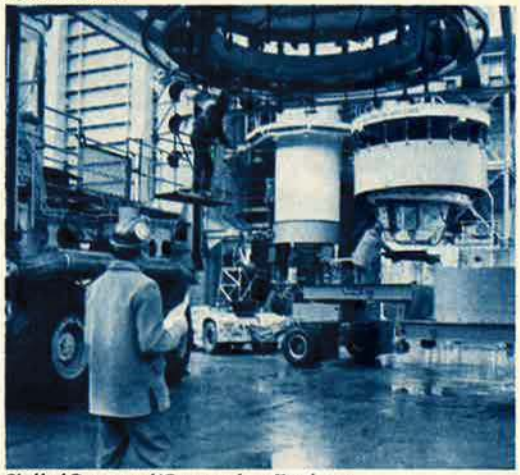


jet Powered Projectiles

Space Motors

d Fueled Ramjets



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AFLC Prepares for War

The emphasis shifts from peacetime efficiency to combat effectiveness.

BY JOHN T. CORRELL, SENIOR EDITOR

ABOVE: An engine, overhauled at Oklahoma City Air Logistics Center, heads toward the cargo terminal for shipment to the field. RIGHT: The business end of an A-10 at Sacramento Air Logistics Center suggests the new look in AFLC operations, with emphasis on meeting the specific needs of forces in combat.

It may seem obvious that a military logistics system should be designed to meet the specific needs of combat forces if they are called upon to execute their war plans.

Obvious maybe, but for a variety of reasons the Air Force logistics machinery has never been structured to do that.

Instead, the traditional approach has been to satisfy peacetime operating requirements for beans, bullets, and maintenance, and then lay in something extra for wartime contingency. The emphasis has been on peacetime efficiency rather than wartime effectiveness.

That is changing fast as Air Force Logistics Command institutes a series of revolutionary changes in the way it does business. If war comes, AFLC plans to be a participant, not an observer.

"We do not intend to operate a peacetime system and then convert if need be into a wartime system," says Gen. James P. Mullins, AFLC Commander. "We have one system. We're gearing our entire operation for wartime, and that will be compatible with our peacetime tasking."

The word is getting around. "We don't supply toilet tissue, paper clips, or note pads," says Sam Greenwood, AFLC Assistant Deputy Chief of Staff for Plans and Programs. "It should not be perceived that we are here to maintain typewriters or telephones. We are in existence only to provide combat capability."

From now on, AFLC will concentrate less on the scattered management of almost a million discrete items and give more attention to full-up weapon systems. New data-processing equipment will allow logisticians, for the first time, to track the status and whereabouts of war matériel so that assets can be shifted around to meet wartime priorities.

Analysis of that data base may also yield accurate assessments, not

previously available, about the number of days of combat that can be logistically supported in any given war scenario.

A rudimentary version of this analysis is already in use for the Battle Staff briefing, a recent addition to the regular schedule at AFLC headquarters. Each week, General Mullins and his senior staff gather to examine in detail the major war plans and their current ability to support the weapon systems tasked in them. Until the planned Weapon System Management Information System (WSMIS) is ready, these assessments will depend partly on telephone inputs and manual calculations. Even that much, however, has given the logisticians a different way of looking at the world.

Effectiveness vs. Efficiency

The shift to wartime thinking will bring change to nearly all Logistics Command activities.

Over the years, AFLC had closed its overseas depots and consolidated its Stateside operations into five major air logistics centers. Similar functions were then grouped for efficiency, which is fine for peacetime. In the event of war, though, these depots might have to surge to 5,000,000 additional hours of work a month altogether.

Some centers could have more surge work load than they could handle. Others could take on more. Consequently, a realignment in depot work loads would be necessary.

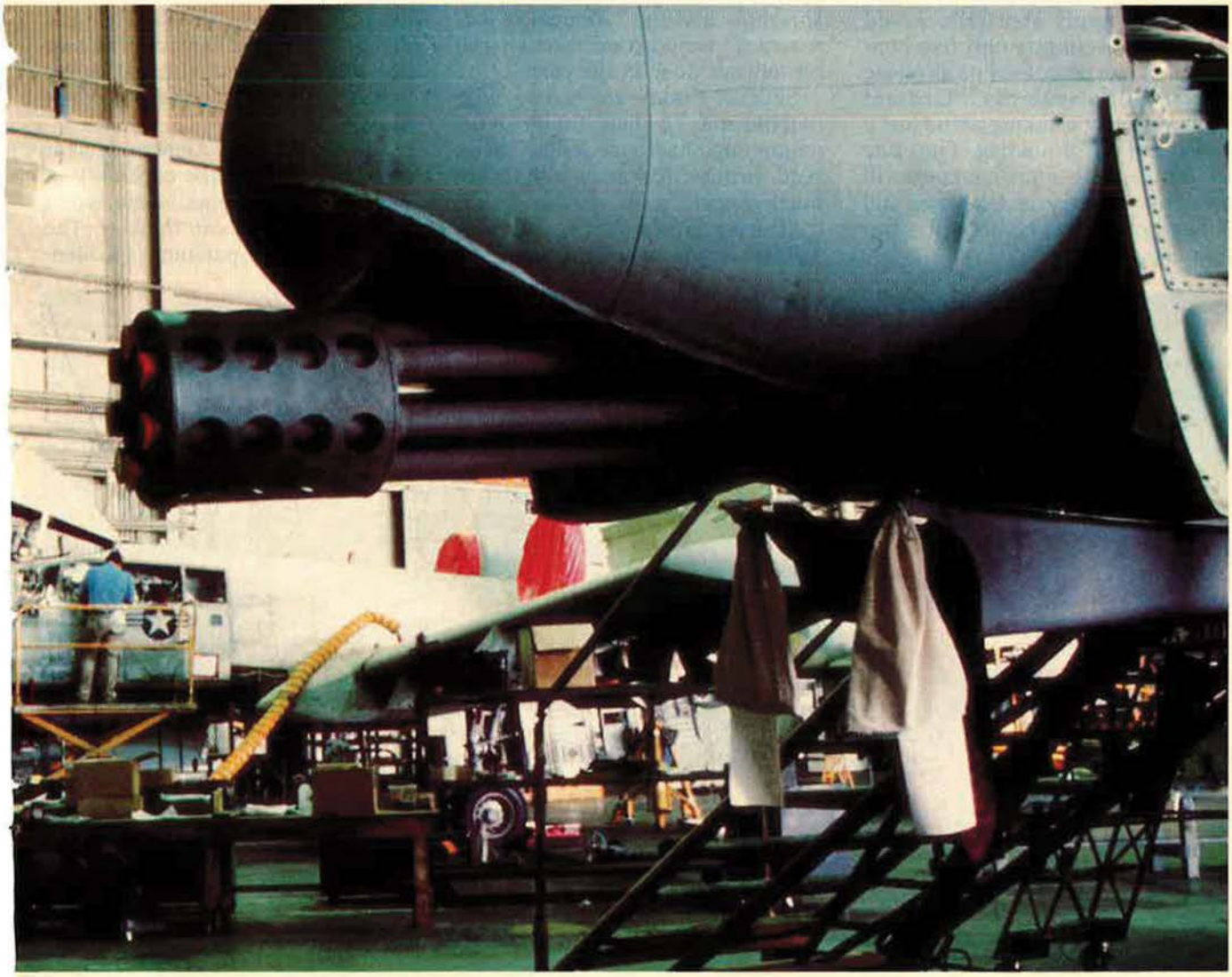
AFLC has just gotten approval to hook up to the World-Wide Military Command and Control System (WWMCCS). This will give Logistics Command an express channel to the unified and specified commands.

These initiatives are vitally important because while the Air Force's ability to sustain wartime operations is a little better than it was in the recent past, it is still far from what it ought to be.

Combat-oriented logistics will enable the Air Force to get more staying power for the assets available, but many logisticians say the basic problem will not go away unless the nation and some factions in the military rid themselves of dangerous illusions.

Illusions and Neglect

"Many of our weapon systems today are not fully supportable—at least not in the kinds of conflicts where they're likely to be used," General Mullins says. "Until recently, we've given little thought to the funding and procurement of logistics support items. We buy F-16s and F-15s but have tended not to think enough about the support these airplanes need. We were predisposed to buy 'rubber on the ramp,' often to the exclusion of necessary logistics support."



Logisticians think of the 1970s as the "Decade of Neglect." With the declining budgets of the post-Vietnam years, the Air Force could not buy both new airplanes and an adequate supply of spare parts. It opted to buy the airplanes and defer spending on operations and support. The method of acquiring and managing support items—a process poorly attuned to real operational needs—compounded the problem. *(See "Why Spares Are Short," p. 56 of this issue.)*

"For years now, we've been trading off real combat capability for the illusion of capability—an illusion of total numbers in an inventory, not of sorties that can be flown, or ordnance that can be delivered," General Mullins says.

The penalty for having an airplane down for parts is more severe than it used to be.

"In the days when we had 2,000 B-47s, the grounding of any one of these airplanes because of maintenance or supply shortfalls would have cost the country only five-hundreths of one percent of its strategic penetration capability," General Mullins says. "Looking ahead just a few years, the grounding of just one B-1B for supply or maintenance will cost this country at least one full percent of its total bomber penetration capability."

Improved funding for operations and support in the early 1980s helped some, but not enough. There is an especially harmful deficiency in replenishment spare parts. Peacetime operating stocks are short, and the Air Force borrows frequently from War Readiness Spares Kits (WRSK), which are short themselves. Other War Reserve Material (OWRM)—the stocks that are supposed to keep the airplanes flying until industry can begin supporting the war effort—is in even worse shape.

"Frankly, most OWRM has been unfunded for years, including that for such first-line systems as the A-10, F-15, and F-16," General Mullins says.

Industrial Reality

These shortages have not generated as much concern as they might have because of yet another illusion: If the United States did have to fight, it would pull its act together somehow and the "Arsenal of Democracy" would come through as it has always done in the past.

Several things are wrong with that illusion. The industrial base the nation once had is no longer there. And production lead times are much longer.

"During World War II, we built 310,000 airplanes in three and a half years," General Mullins says. "Today, it can take that long to get a few landing gear parts."

Moreover, the notion that America waited until World War II was upon it to begin preparing is also in error.

"The nation began tooling up for defense a full eighteen months before Pearl Harbor," General Mullins says. "In fact, during the second half of 1940, a real defense boom began as the government awarded more than $10 billion in contracts."

Future wars will be conducted on a "come as you are" basis, he says, and "without adequate logistics, the best equipment and the finest men will be fighting on the losing side."

Penalties and Resources

In the short term, General Mullins believes the Air Force can increase fairly quickly its capability to sustain combat by the sort of initiatives AFLC has launched. The clear intention is to emphasize effectiveness. Previously, the number-one driver had been efficiency. The new philosophy might suggest some penalty to be paid, either in cost or in work not done.

"To the contrary," General Mullins says. "Sacrificing the capability of our combat systems is the worst false efficiency I can think of. The objective we are pursuing is to iden-

A C-5 gets programmed depot maintenance (PDM) at San Antonio Air Logistics Center. AFLC does slightly more than half of the PDM work load at its own depots and contracts out the remainder.

tify the tasks and array them in priority and harmonize them in such a way that in allocating the resources made available to us, we will have the optimal combat capability from those resources. That which is not accomplished will be the lowest priority and thus have the least impact."

The switch to management by weapon system instead of by item will more than offset any possible penalty, he says. In the past, varying levels of support for different subsystems of an aircraft often led to unexpected inefficiency anyway.

In the longer term, the solution to much of the Air Force's sustainability problem may be to design systems that are so reliable and durable that they need fewer spare parts and less logistics support.

General Mullins points out that for the same number of dollars, the Air Force could purchase ninety airplanes rather than 100 and use the rest of the money to buy all of the increased reliability that can be had. To the extent that high reliability is not possible, the money might go for more spares and piece parts.

"That way we could maintain a high operational readiness," he says. "We could have, say, ninety percent of ninety airplanes—or eighty-one—combat-ready instead of the fifty out of 100 combat-ready that our current system provides."

General Mullins would like to see all operational commanders argue as forcefully for support funding as the logisticians do. He believes that data from WSMIS will help him convince them to do that, and also help bring others around to this point of view. In fact, WSMIS and the other new data systems are vital to much of what AFLC is attempting to achieve.

Breaking the Data Barrier

The idea of combat-oriented logistics occurred to logisticians before now, but the job was always beyond their capability to perform. The main problem was the staggering volume of data to be collected and analyzed. It encompasses literally millions of data points, from the situation with a fighter on the line at Bitburg to the expected delivery date of a box of bolts at Warner Robins.

In the early 1970s, AFLC sought to acquire a data-processing capability called the Advanced Logistics System (ALS). It was supposed to reduce the more than 400 separate data systems to just six third-generation computer systems, one at each of the five major Air Logistics Centers and one at AFLC headquarters. It was also supposed to provide instant reports on everything flowing through the logistics pipeline.

It didn't work, and after years of trying, Logistics Command was directed to cut its losses and cancel ALS.

"It turned out that our reach exceeded our grasp, and we were not able to produce what we had thought to be possible," General Mullins says. "We had to defer acquiring that capability until it was feasible. The technology is only recently available, and it will allow us to do things that would not have been possible just a few years ago."

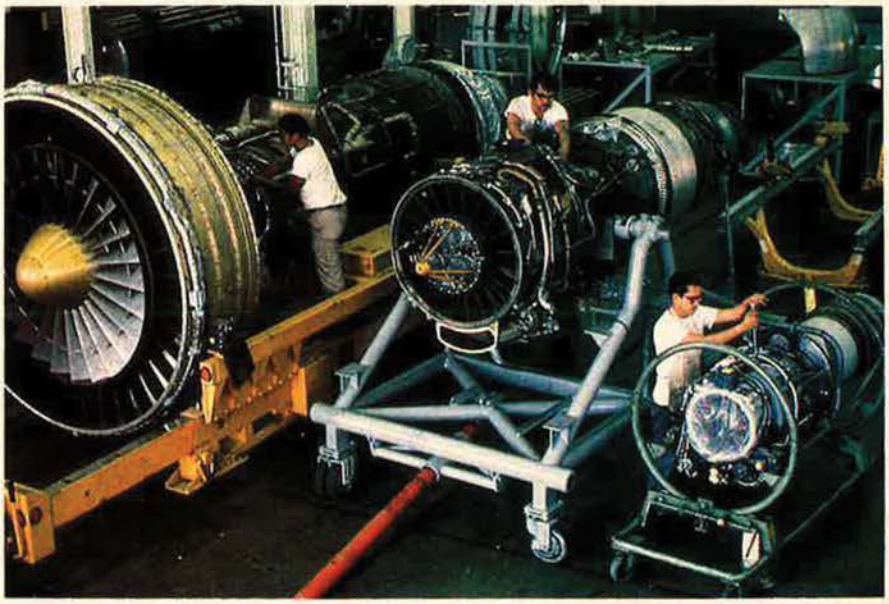
This time, AFLC will not try to acquire one system to do everything. Major data handling initiatives include the Requirements Data Bank (RDB) to replace the miserably outdated system now used to forecast and track requirements and the Combat Assessment Capability (CAC) to predict and forecast the ability of combat forces to produce combat sorties and their current posture for going to war. The Weapon System Management Information System (WSMIS), using CAC, will integrate selected data from other systems and analyze it in terms of AFLC's ability to support various war plans.

WSMIS will not be fully operational until 1987, but parts of it will be ready before then and will go into use as soon as they are available. The WSMIS concept, executed to the extent that limited automatic data input and manual calculations allow, is the basis for the weekly Battle Staff briefing.

Assessing Sustainability

The Battle Staff takes note of the familiar C-rating, in which C-1 status indicates an airplane ready to fly and fight, but it doesn't stop there. The logisticians say that C-1 describes an airplane that can be counted on to deliver a single sortie. Ultimately, WSMIS will assess each system in the war plan not only for readiness but also for surge and sustainability, and look at the status of its support equipment as well. Strategic airlift may be getting top priority on spare parts, and the airplanes may be able to fly all the missions required, but are there enough forklifts to move the cargo through the aerial ports? This analysis will identify potential chokepoints in the entire system.

A valuable feature of WSMIS is that it will examine the status of a weapon system in progressive "indentures." If the broad-look chart on the system indicates trou-



Engines await maintenance at San Antonio Air Logistics Center. Engines consume about half of AFLC's maintenance dollars, and engine parts are getting more expensive.

ble, WSMIS drops down to increasingly narrow focus until the basic cause of the problem is isolated. In this manner, AFLC may learn it needs to expedite maintenance of exchangeable items at a particular depot to relieve a nonreadiness problem with a specific weapon system tasked under a specific war plan.

General Mullins refers to producing combat capability as the "Meaningful Measure of Merit." He acknowledges that this is more a management philosophy than an absolute set of yardsticks. The real purpose is to concentrate attention on the factors that determine if a war plan is supportable. For example, Mean Time Between Failure (MTBF) becomes significant only in the context of a particular system in a particular war plan. A ten-hour MTBF for a fighter on a two-hour sortie is one thing, but for a strategic bomber on a twelve-hour mission, it's quite another.

Logistics Operations Center

AFLC has set up a sort of super command post called the Logistics Operations Center (LOC). It has a staff of 585, headed by Brig. Gen. Thomas A. LaPlante, and its everyday job is to know in some detail how available assets square up against actual requirements, and to devise schemes for shifting assets around to get the job done.

As WSMIS and CAC come on line, the Logistics Operations Center will begin performing those functions. In the longer run, the LOC will address the specific consequences of resource shortfalls.

"In the past—and now—when we are asked the impact of a budget cut, our traditional response was in terms of stock levels in the bins," General LaPlante says. "In the future, we will say to the budget planners, 'That shortfall represents fifty-five percent of the logistics support we can provide for this weapon system tasked in the war plan.' We've never been able to do that before."

Logistics Command is doing many things now that it was unable to do before.

Working the War Stoppers

As described elsewhere in this issue, the old procedure of managing by item instead of by weapon system—coupled with an inadequate flow of management information—led to sweeping imbalances of support to weapon systems. In FY '82, for example, funding for the H-1 helicopter varied from 7.4 percent at one Air Logistics Center to 100 percent at another. For reasons that may have made sense in a narrow perspective, money was pulled off high priority systems and spent on systems with less priority.

"For years and years, we worked things by budget programs and by supply classes," says Maj. Gen. William P. Bowden, AFLC Deputy Chief of Staff for Matériel Management. "What we have been doing in the past year is allocating dollars to specific weapon systems and putting money on those where we get the most payoff. We have been buying spares for airplanes according to their priority and where it relieves the NMC (Not Mission Capable) situation."

To accomplish this, AFLC has elevated the role of system managers.

"We are giving these people the authority and wherewithal to manage their respective systems—in effect putting the Air Force inventory into their hands," General Bowden says. "It involves holding them accountable for ensuring the combat capability of the weapons they manage. And it involves providing direct, aggressive management for all weapon systems, especially in terms of their wartime tasking. But perhaps more than anything else, it involves the tens of thousands of people in this command getting behind the weapon system program managers to get the job done. We rely absolutely on the tireless and often unrecognized efforts of those in all of our logistics activities—activities like warehousing, procurement, and base support.

"We have had to make lots of manual adaptations to our current management information systems," General Bowden says. "With those adaptations, we can break out spares by weapon system. We're in a much better position to reallocate resources. Each ALC keeps track now of spending patterns, and we've provided guidelines to them, so we're spending at a balanced rate."

Support for an Aging Fleet

Between now and October 1984, an on-line capability is being added to the wheezy old DO41 data system to forecast spare parts requirements. This system, with its off-line batch processing, was a big factor in the Air Force's grievous underestimate of spare parts requirements for FY '82.

"The DO41 is not capable of doing things by weapon system and we can't adapt it to do that," General Bowden says. "Long range, we are developing the Requirements Data Bank to replace it. Meanwhile, the DO41 enhancement program will provide us a little more real-time visibility."

Such measures help the overall

Maintenance Man-Hours Per Flying Hour

System	1975	1976	1977	1978	1979	1980	1981	1982	*1983
F-15	29.10	27.77	25.95	30.58	31.86	28.64	36.90	30.50	44.14
F-15C						13.56	24.30	22.33	32.84
F-16A					25.44	22.62	11.23	14.57	21.82
F-16B						18.38	13.90	15.34	30.55
B-52G	46.53	46.94	44.91	45.45	42.14	40.55	39.59	33.96	50.68
B-52H	45.52	48.94	47.55	49.26	39.50	33.87	34.64	30.17	42.90
C-5A	107.86	89.35	48.19	41.91	53.39	47.32	52.48	36.97	64.90
C-141	17.49	18.61	18.15	17.26	14.98	15.03	20.69	19.33	25.16
A-10				7.16	11.76	11.96	11.20	8.93	13.93
KC-135	32.79	31.63	34.04	26.59	21.22	23.17	20.20	17.52	24.16
FB-111A	57.21	47.72	36.40	58.24	47.57	45.83	60.76	49.03	56.03
F-111D	54.03	51.71	54.59	70.30	60.65	41.00	45.32	45.65	70.43
T-38	8.81	11.55	8.74	8.97	12.22	8.99	10.31	6.76	10.90
C-130		25.06	37.09	22.38	19.61	19.78	21.60	19.72	24.72
RF-4C	39.57	31.91	33.83	34.23	32.82	31.09	22.87	18.17	36.09
F-4D	55.64	41.87	54.15	56.19	47.68	44.84	28.41	26.94	41.99
F-100	19.83	17.09	17.09	16.05					

*Through March 31, 1983

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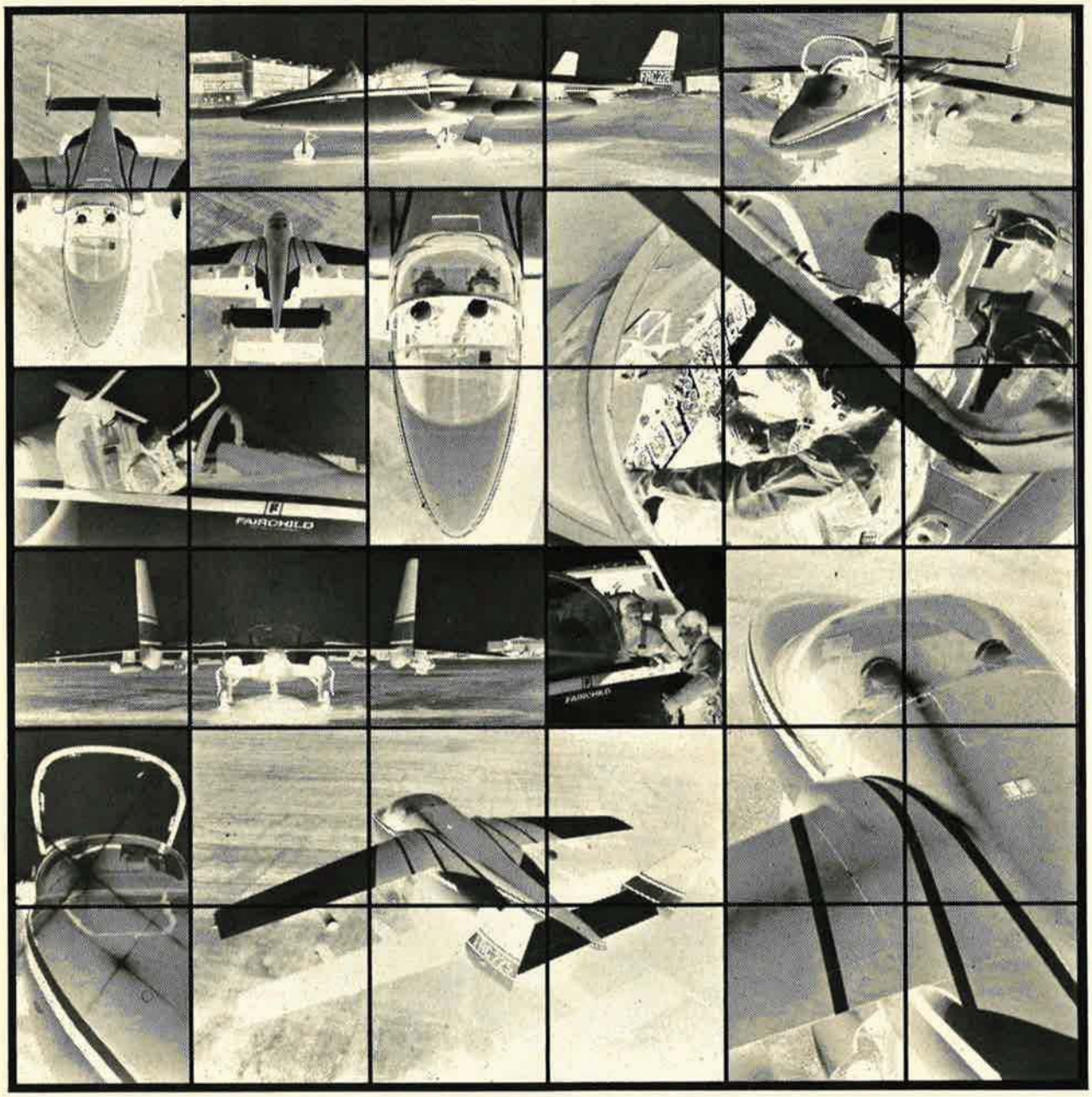

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logistics problem, but they don't cure it completely. In wartime, the maintenance burden would be heavy.

"We'll have to go to war with what logistics we've laid in," General Bowden says. "We're making some progress. When you compare our capability to execute our mission from 1980 up until now, you see some percentage points of improvement. But I won't say we're anywhere near the kind of get-well posture we need in order to meet all of our objectives. We're going to have to generate the airplanes using our workaround procedures. We'll still have to depend on some extraordinary maintenance actions, not only by depot people but also by people in the field."

About forty percent of the AFLC work force is engaged in maintenance, and with an aging fleet of aircraft to take care of *(see chart below)*, the job is formidable, even in peacetime.

Many of the airplanes flying today were bought with the assumption they would be replaced after ten years of service. That had been the pattern in the past. Since the 1960s, however, the Air Force has been unable to replace airplanes as it did previously, and has kept older ones in service far longer than anyone ever expected.

"What we have done, of course, is modify the old systems to give them new capability," General Mullins says. "In fact, a B-52 today has only its silhouette in common with one from the mid-'50s."

A brand new airplane, because of its immaturity, is expensive to maintain and support. It is most economical to operate between its second and tenth years.

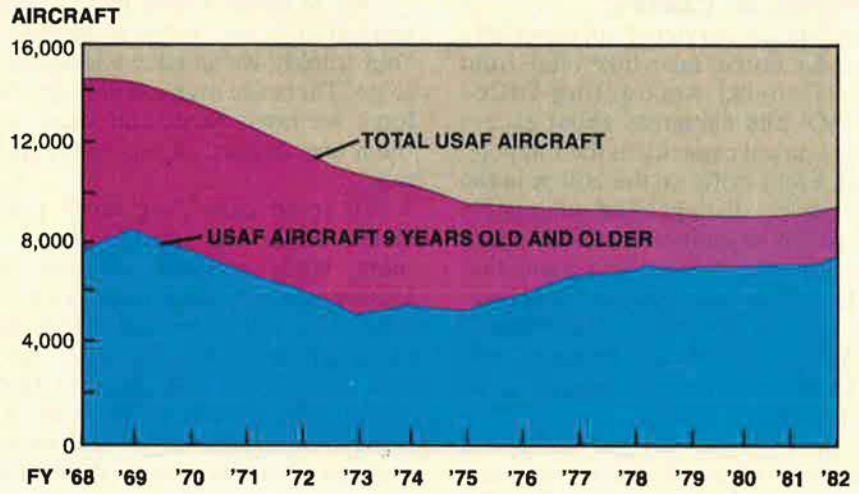
"At about ten years out, though, we again experience a sharp cost increase, primarily due to airframe aging, wing changes, reskinning, and reengining—all manifestations of aging systems—and they all substantially impact on our work load in this command," General Mullins says.

Some preliminary studies done recently at AFLC suggest that the cost trend lines may not rise as sharply as previously believed when a system ages, but there is no doubt that they do rise. An additional problem is that production lines for spare parts may have shut down years ago, and tooling up again to produce parts is expensive.

"We've been prolonging system life well beyond expected life with modifications, and consequently we in logistics have been responsible for supplying much of the new combat capability the Air Force has been receiving," General Mullins says.

AFLC performed 528 depot modifications last year, and contracted out 249 more.

USAF's Aging Fleet



More than seventy-five percent of USAF's aircraft inventory is nine years old or older. As aircraft procurements declined, it became routine to keep systems in service longer than had been expected. There is greater reliance on modifications to provide new capabilities that the Air Force needs—and the age of the fleet adds to the maintenance work load.

Directions in Maintenance

For some time now, the Air Force has been following a concept called Reliability Centered Maintenance (RCM). "What that says, basically, is that if it's not broke, don't fix it," explains Maj. Gen. M. T. Smith, AFLC's Deputy Chief of Staff for Maintenance.

Previously, the policy had been to pull parts off airplanes and replace them at scheduled intervals, even if they were still working. Analysis found that most of the parts had not needed replacing. Such time changes are minimal today, and are mostly done where failure of a part would be catastrophic.

General Smith says that engines consume about fifty percent of his maintenance dollars. Engine parts are already expensive, and are getting more so.

"The situation is not the same as it is with avionics," he says. "On an individual basis, the cost of avionics parts is going down. The reliability is going up. The reason that avionics costs overall are rising is that everything has a doggone microcomputer in it now, and there are more avionics items to support. It's different with engines."

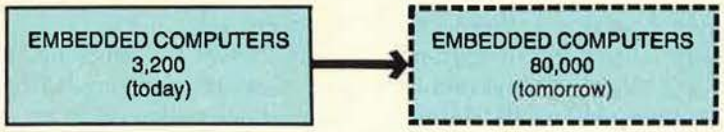
General Bowden's Matériel Management staff is working on an initiative entitled the Comprehensive Engine Maintenance System (CEMS), which ought to help General Smith with his engine work load, even if it can't do much to bring down parts prices.

"Today, four separate systems exist which contain diagnostic type data," General Bowden says. "Our plans for CEMS call for us to bring together data from on-board diagnostics, the oil analysis program, parts life tracking, and traditional maintenance. Within CEMS we're talking about knowing more of the internal workings of an engine when it's installed and when removed, being able to know what to fix, and doing it as rapidly as possible with a high-quality acceptance level."

The big change in the maintenance work load of the future will be in embedded computers. A decade from now, AFLC expects to be supporting twenty-five times as many embedded computers as it does to-

The Boom in Embeddeds

	1954	1982	1990s
AIRFRAMES	20,000+	9,297	10,500
ENGINES	48,286	53,832	54,820
ICBMs	—	1,052	1,100
AIR-LAUNCHED MISSILES (types)	2	22	26
MUNITIONS (types)	75	120	135
CRUISE MISSILES	—	—	2,435+



By the 1990s, AFLC will be supporting more airframes and engines, but the big change in work load will come from a meteoric rise in the number of embedded computers. Increasing integration of on-board electronics will mean a more complex job for the avionics maintenance people.

day, and the support will be more difficult than working on simple avionics systems.

Finding the Gremlins

"In the past we had sensors that ran to gauges in the instrument panel," General Smith said. "Today, they run through a mux bus that comes to a big computer and they play one with another. You can have a subsystem that's working perfectly. Put that thing in a total system and it doesn't play."

Presently, work on various black boxes for an integrated electronics suite may be performed at different Air Logistics Centers. The boxes themselves are more reliable than they used to be, and the bits and pieces in them are more reliable, too.

"But," General Smith says, "each one of these things has a tolerance. Plus or minus so many microfarads. You get them all together on the system in the field, and there's a gremlin in there."

The challenge will be even greater with fly-by-wire controls and embedded computers of future weapon systems. The solution, says General Smith, will have to be integrated support facilities, involving some realignments among the depots in management and repair of systems.

There will also be some redistribution of work load as AFLC postures itself to perform the necessary wartime surge in maintenance.

"We presently have about 37,000 people in depot maintenance," General Smith says. "We can do our wartime surge in our most rigorous scenario with 39,000 people, but we need to restructure the work load so the surge is balanced among the five ALCs.

"There is about a million hours of surge work load a month for each ALC. Some right now are very low in surge, whereas others are very high. We've got to balance it out, and we intend to do that."

The manpower and experience situation in the depots has been improving, and in a surge posture, workers would divert their attention, using secondary skills, to priority systems.

Heading for Capacity

All of the services, but especially the Air Force, have taken flak from the General Accounting Office (GAO) and Congress about excess and unused capacity in their depots. Not every critic on the Hill or in the media has distinguished adequately between capacity—the floor space and the equipment—and capability, which also includes the manpower to get the job done. The Defense Department now has about 7.2 million hours of excess capacity in its aeronautical depots.

"In 1989, we will exceed the total capacity in all of the aeronautical depots in DoD," General Smith says. "So the excess capacity is really a figment of someone's imagination. We are ninety-two percent workloaded now across the board. When you have only an eight percent fudge factor, you ought to have new buildings under construction. You ought to be worrying about what to do in 1989 when we're at 100 percent and bulging."

Looking to the Future

The Air Force Acquisition Logistics Division (AFALD) of Logistics Command was created to work with Systems Command on ensuring that reliability and supportability are built into new weapon systems from the beginning. And indeed, AFALD is working to ensure that such new systems as the B-1B, the ATF, and the TR-1 will be more reliable—but part of AFALD's work is looking out for the small items that aren't really as small as they seem. For example:

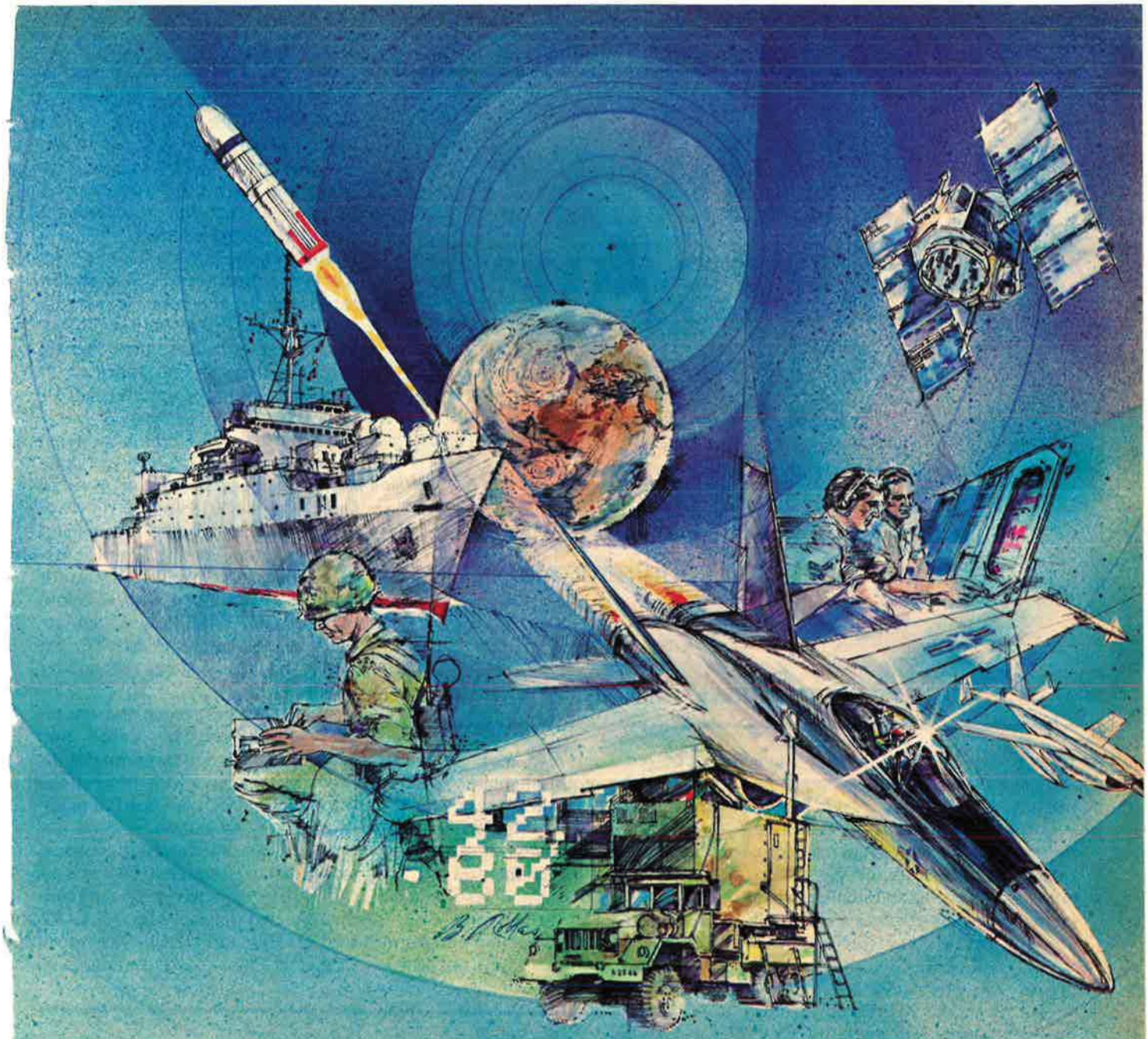
"Seventy to seventy-five percent of all maintenance in avionics, unless the system is bused, involves pins and plugs—the places where connections are made," says AFALD's Robert W. Brown. "Eliminate the pin and plug problems and you've just cut maintenance by seventy-five percent."

The new orientation to delivering combat capability is pervasive. Everybody in AFLC is getting the message, from the military guard at the front gate—who now wears fatigues one day a week to remind him he's not just another federal employee—to the blue-collar worker at the depot, who is suddenly finding out a great deal more about the weapon system he supports.

"We've come a long way in this command," says General Mullins, "but frankly we all have a long way to go. There are many serious problems we must face, and some of them are, in part, of our own making.

"In some cases, we don't precisely define the specific requirement, while in others we rely on inadequate management systems. And very often, we fall victim to outdated mind-sets—to inaccurate and limited ways of thinking that lead us to believe either that we don't have a problem or that there isn't an effective way to deal with it."

It's difficult to argue with General Mullins when he claims that a new chapter in the history of military logistics is now being written—and that AFLC is writing it. ■



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Why Spares Are Short

There aren't enough spare parts to sustain wartime operations. And a faulty forecasting system has been underestimating requirements.

BY JOHN T. CORRELL, SENIOR EDITOR

THE Air Force does not have enough spare parts to meet its wartime obligations.

Even to support the peacetime flying program and keep readiness rates up, maintenance crews increasingly have to cannibalize parts from one airplane to fix another, pull spares out of wartime reserve stocks, and make repairs by patching.

The shortage of spares affects both readiness and sustainability, but sustainability—the staying power to continue operations once war begins—is hurt more. The Air Force can find ways to make do and maintain its alert posture in peacetime, but the inadequate supply of spares would soon begin to tell under combat sortie surge conditions.

The spares problem is not new. Meager defense budgets of the late 1970s left the Air Force with enough money either to buy the new weapon systems it desperately needed or to support fully the equipment it already had—but not enough to do both.

The Air Force decided on modernization at the expense of logistics support for existing systems. This meant, of course, that the logistics posture had to get worse before it got better. As new weapons entered service, the requirement for spares grew. In addition, the price of spares went up because of inflation, longer lead times, shortages of strategic materials, and other factors.

The 1980s brought a resurgence of support for the armed forces, bigger defense budgets, and a new emphasis on readiness and sustainability. The Air Force saw FY '82 as the year its spare parts problem would finally be solved. Congress funded ninety-four percent of the Air Force's FY '82 request for peacetime operating stocks.

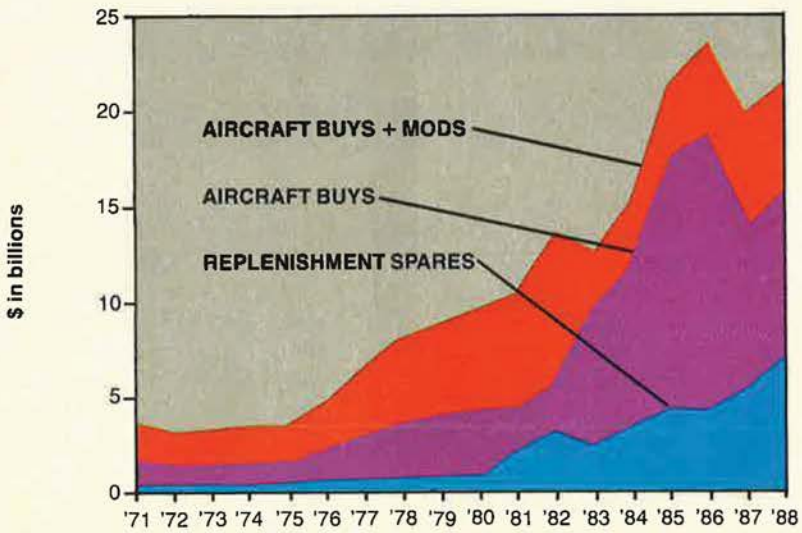
Gross Underestimates

But then the bottom fell out. The Air Force discovered it had underestimated its peacetime operating stocks requirement for FY '82 by $873.5 million. That, plus the six percent Congress had knocked off the request and the amount the Air Force had reprogrammed internally, led to a $1.1 billion shortfall on spares for 1982. Since the same faulty process had been used to forecast the FY '83 and FY '84 requirements, they were grossly understated, too. By the time the underestimate was discovered, the Air Staff was well along with development of the FY '85 Program Objectives Memorandum (POM). The extent of the mess was worse than $1.1 billion.

When both peacetime and war reserve stocks are considered, and when the unfunded requirement for 1982 is combined with projections through FY '85, the shortfall is approximately $4 billion.

"With current funding profiles, we slip the attainment of our sustainability objectives by approximately two years," Maj. Gen. Alfred G. Hansen, USAF Director of Logistics Plans and Programs, told

Systems vs. Support



the House Armed Services Committee.

The Air Force will not have an entire aircraft system in full readiness and sustainability shape until FY '86, when the C-5A spares from FY '84 procurements are delivered.

"We had originally planned greater progress in funding sustainability for other airlift aircraft, the tankers, and front-line fighters," General Hansen said. "However, the FY '82 requirements growth problem caused a delay in this funding until FY '85. In FY '85, the Air Force plans to fund a substantial amount of the requirement."

Pictured is a spare solid-aluminum flush rivet. A new spares forecasting and acquisition approach is necessary to ensure that the Air Force has on hand the spare parts it needs to sustain combat. (Photo by William A. Ford, Art Director)

A Surprise Surfaces

What had happened was this. A large and unprogrammed spare parts requirement surfaced in the late summer of 1982. The Air Force had already completed its budget deliberations for FY '84, and was in no position to make such major shifts in its near-term money.

"The increase in the FY '82 requirements was caused by increased break rates, lead times, new stock levels, new items, unit costs, and aircraft engine improvement programs—particularly the TF39 engine for the C-5 and the F100 engine for the F-15 and F-16," General Hansen said.

The Air Force had taken its first cut at establishing the FY '82 spares requirement in 1979. The estimate was recomputed quarterly. Because of lag time and other problems in a woefully inadequate data-processing system—which has no on-line capability—March 1982 figures that foretold the increased requirement were not available for analysis until July and August, and were not validated until September.

To get to the bottom of what went wrong, Air Force Chief of Staff Gen. Charles A. Gabriel directed a comprehensive review of the spare parts forecasting and acquisition process. The inquiry, called "Corona Require," was chaired by Gen. Alton D. Slay, USAF (Ret.). The report castigates the Air Force's whole approach to spares forecasting. It says that a new, more responsive data-processing system must be developed. Until it is ready, the current one has to be modified and put on-line. Furthermore, the report says, the Air Force must make major changes in the way it acquires and manages spare parts.

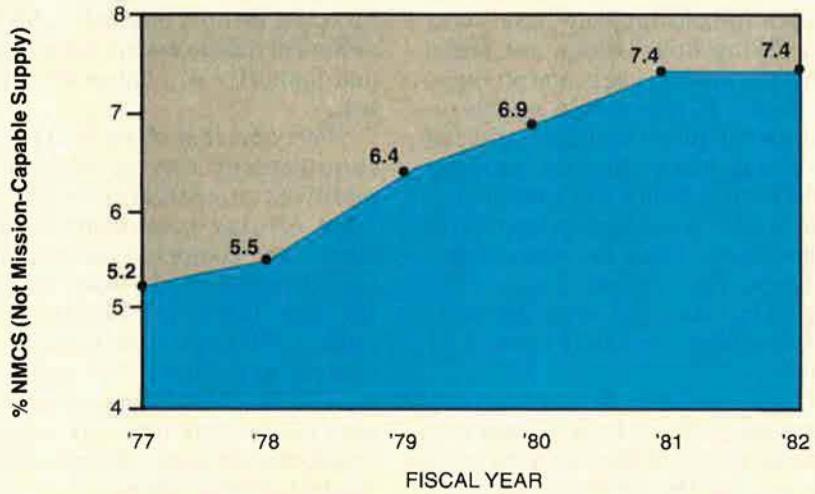
Water Gets Deeper

Corona Require also answers the natural question of why the spare parts problem has not already crippled everyday operations. The Air Force consistently flies ninety-nine percent of its planned flying hour program. That accomplishment has led some to think the spares problem may not be as bad as the logisticians claim.

"Although we are keeping our heads above water, the water may be getting deeper," the Corona Require report says. As the chart on this page shows, the percentage of aircraft NMCS (Not Mission Capable—Supply) has risen sharply since 1977.

Fortunately, the purchase of new spare parts only tops off the inventory. Ninety percent of the time, an equipment failure can be taken

Grounded by Supply



care of with a part repaired locally or at the depot. Even so, the maintenance troops are resorting more and more to cannibalization (115,000 instances in 1982), withdrawals from wartime reserves (202,000 times in 1982), and lateral support actions (41,000 in 1982). Last year, thirty-six percent of the MICAPs (instances of airplanes not mission capable) were resolved with spares from war reserves—exactly matching the thirty-six percent that were fixed with parts off the shelf.

Meeting a Contingency

If an unusual situation occurs, the system somehow rises to the occasion.

When Iran and Iraq went to war in 1980, for example, the United States dispatched the E-3A AWACS to support air defense in Saudi Arabia. Four aircraft deployed and flew more than 200 hours a month each. Peacetime operating stocks were designed to support only sixty-five flying hours a month per aircraft, so the extra spares were taken out of a six-aircraft War Readiness Spares Kit (WRSK). The supply pipeline was shortened, premium transportation was used to get the spares to the scene, and overtime was authorized for the depot repair people.

The Air Force flew 8,229 hours it had not planned on and supported the contingency. It also added unexpectedly to its deficit in peacetime operating stocks.

Contingencies are just one source of change in spare parts requirements. Others include fluctuation in prices, alterations to missions or force structure, technical surprises—such as when parts break sooner than their advertised Mean Time Between Failure (MTBF)—differences in production lead time, and even the need for the replenishment spares account to pick up the slack if too few initial spares were bought when a new airplane was acquired. There is no management reserve to cover unexpected change, and the system deals with it awkwardly. But as the FY '82 budget experience and the Corona Require findings illustrate, there are a great many things that give the system trouble.

Data in Wonderland

The main instrument that spare parts planners shot themselves in the foot with was the antiquated and hopelessly inadequate computer system used to forecast requirements. It has no on-line capability and took seventy-five days to complete each quarterly computation cycle by batch processing. Trend analysis must be done manually. The data was out of date long before decision-makers got their first glimpse of it.

The software accommodates only one value for such variables as price, lead time, repair time, and demand rate. For example, it cannot store both the last procurement cost and the actual replacement cost for a spare part. It looks only at history, updating the original acquisition cost figure by the notoriously unrealistic DoD inflation index.

An actual case from the FY '82 underestimate illustrates what can happen. T56 engine tie bolts for the C-130 were last purchased in 1970 at a cost of $344 each. The data system, faithfully applying twelve years' worth of inflation indexes, arrived at an expected FY '82 price of $861. It did not take into account that the Air Force had bought a large quantity the first time, and that the unit price might not be as good for a smaller number of replacements. Nor did it recognize that the tie bolt line had been shut down long ago and the tooling destroyed. In actuality, the FY '82 price for tie bolts was $6,746 each—$1,284 for the part and $5,462 for a prorated share of the cost for tooling up to make it.

Widgets and Flying Hours

An important variable in the spares forecasting data base—cost per flying hour—does not mean what the unwary keep interpreting it to mean. It refers only to the requirement for *new* spares, divided by flying hours. Say the program calls for a system to fly 1,000 hours, which will cause the consumption of ten widgets. There are nine widgets in stock. The projected cost per flying hour is the price of the one additional widget required, divided by 1,000.

Then say there is a ten percent increase in flying hours. Total widget consumption goes up from ten to eleven, and the Air Force must buy two more widgets instead of one. The requirement has increased by 100 percent, but planners fine-tuning the budget may not realize this. They add ten percent more money to cover the ten percent increase in flying hours, and a deficit is created.

There are other booby traps of a similar nature.

One reason for this seeming madness is that the process was built to carry out a spares program, not to plan one. It does very well at tracking deliveries and watching for due dates, but it does poorly in detection of changing trends in production lead times until delivery of the parts is imminent.

Ironically, the Air Force may get some short-term benefit from this peculiarity. Production lead times began decreasing rather dramatically in 1981, but the data system is still reflecting the 1979–80 lead times. Thus, some spares will be delivered sooner than the system now projects, and they will be most welcome. But as the economy improves and commercial aerospace orders pick up, lead times will increase again—just as the system starts counting on a dramatic decrease.

Human Accomplices

When underestimating the FY '82 requirement, the data system obviously had human accomplices, but Corona Require could not discover exactly who they were.

"Everyone has a piece of the action, but no one is held responsible for accurate requirements forecasting or growth," the report says.

"The study group found the cause for almost every dollar of the $873.5 million growth. They could not, however, identify anybody who had sufficient management information and authority to control the problem.

"Forty percent of the final FY '82 requirement was generated by additives or corrections resulting from off-line management decisions. The computer system, commonly touted as the sole cause of the problem, was not the lone culprit. Managers throughout the system are allowed to enter unprogrammed requirements into the data base at any time. As a result, requirements grow, independent of funding considerations."

The human accomplices put un-

SCIENCE/SCOPE

The U.S. Air Force will save $100 million annually when North America's new air defense system goes into full operation late this year. The Joint Surveillance System will slash operation and maintenance costs because it is fully automated and replaces a semi-automatic system. In manpower needs alone there will be a reduction of 6,200 persons. The command centers will require only about 100 hours of maintenance a year at each site. Hughes Aircraft Company designed and developed JSS, and has built or managed systems for more than 20 nations.

A Very High Speed Integrated Circuit chip has been produced at Hughes, marking a significant step toward using advanced semiconductor technology in military systems. The chip, built after less than two years of development, contains 72,000 transistors in an area the size of a thumb tack. The VHSIC program is being conducted by the U.S. Department of Defense to develop chips that will give military electronic systems a tenfold increase in signal processing capability. The high-speed, compact VHSIC chips will be more reliable and will require less power than integrated circuits now in use.

The infrared Maverick missile has impressively passed an important reliability trial leading to high-rate production. The weapon, which adds critical nighttime air-to-surface multitarget attack capabilities to the U.S. Air Force arsenal, underwent vigorous testing to validate design modifications made to resolve problems found in earlier test programs. In captive flight tests that simulated tactical missions, five Mavericks combined to operate over 103 hours with just one minor mechanical failure. Similarly, in laboratory tests that included high and low temperature cycles and vibration, three guidance units operated 192 hours with only one failure. Both problems have been corrected. The infrared Maverick creates TV-like pictures of a scene based on temperature differences between a target and its surroundings. It is in pilot production at Hughes.

The radar on the Australian F/A-18 Hornet is being built with participation from Australian companies. Hughes is the prime contractor to McDonnell Douglas for the AN/APG-65 radar. As part of an industrial offset program, Phillips Electronic Systems is co-producing the radar data processor for the Australian Hornets and will integrate the processor with the rest of the radar system. It will then perform the final testing of the APG-65 for the Australian F/A-18.

The U.S. Army will save almost $100 million in the next three years with its first multiyear production contract with Hughes. The Army will take delivery of 2,161 laser rangefinders and thermal imaging systems for its M1 Abrams main battle tank through late 1986. The multiyear contract has several advantages over "second sourcing," in which one company is chosen to build hardware based on a first company's design. The large investment needed to prepare the second manufacturer for production is eliminated. Because long-term planning is made easier, parts can be bought cheaply in one large order and production control costs are reduced. Also, contractor and subcontractor work forces stabilize.

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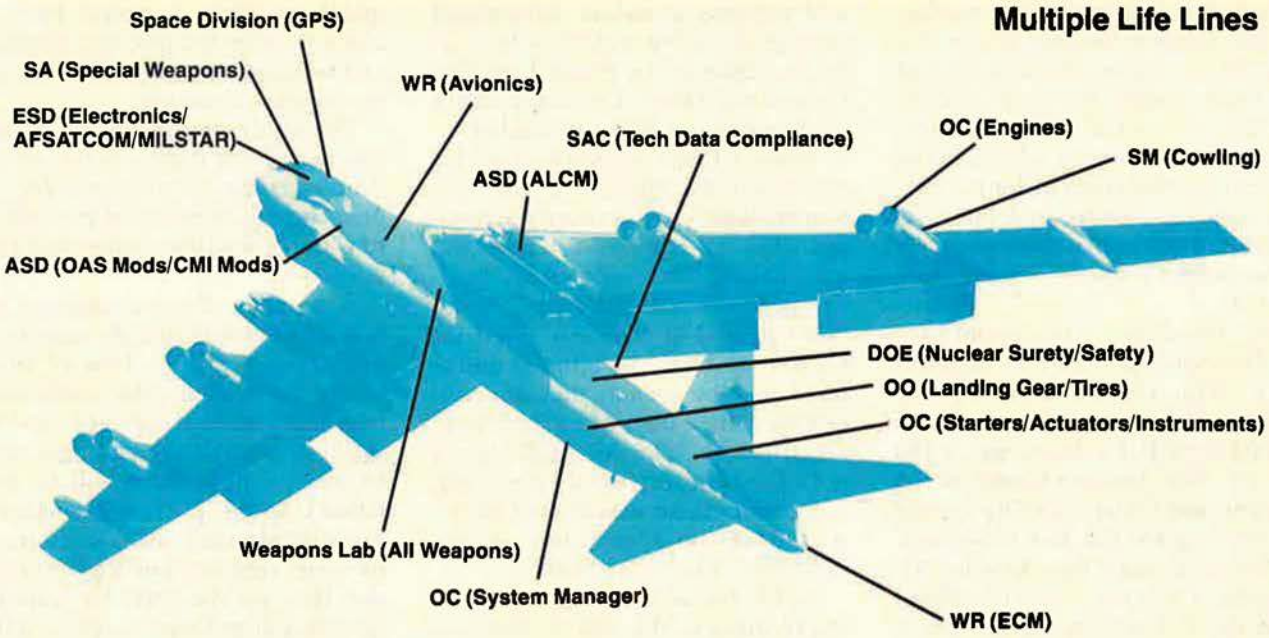


Responsibility for B-52 subsystems is divided among the five air logistics centers—Oklahoma City (OC), Ogden (OO), Warner Robins (WR), Sacramento (SM), and San Antonio (SA)—and other agencies.

realistic data into the system. They assume, for example, that depot flow times will always be as planned and that there will be a perfect distribution of assets. They use overly optimistic break rates in deciding how many initial spares to buy. They assume 100 percent repair of parts, and that the bits and pieces needed for those repairs will always be available at both base and depot. In an acknowledgment of reality, a small fudge factor is built into the computations, but the final figures are an extremely conservative estimate of needs.

The Corona Require report characterizes the spares acquisition process itself as "unbelievably complex" and publishes three pages of flow charts rendered in fine print to prove its point.

The complexity is aggravated by dividing the replenishment spares requirement into three parts, a peacetime segment and two wartime segments. *(See box below.)* Each requirement is computed by a different system, and each is procured, stored, and managed separately—and needlessly so, says the report.

Parts for Peace and War

The Air Force buys two kinds of spare parts: initial and replenishment. Initial spares are bought along with a new aircraft. There are supposed to be enough of them to support the system for two years after first aircraft delivery.

Replenishment spares take over when initial spares run out. They come in three categories, each separately managed:

- Peacetime Operating Stocks (POS). Parts to support readiness and aircrew training. These stocks form the baseline to which additional parts are added for deployments or combat operations.
- Wartime Readiness Spares Kits/Base Level Self-sufficiency Spares (WRSK/BLSS). Parts to transition into war and fight the first thirty days.
- Other War Reserve Material (OWRM). Stocks to sustain forces at wartime levels after WRSK/BLSS is exhausted and before industry mobilizes to satisfy wartime needs.

The aircraft replenishment spares system encompasses about 95,000 items, of which 12,000 to 14,000 are bought each year. Because spares are expensive and because they can be overhauled for about fifteen percent of their stock list price, the Air Force tries to repair as many as it can before buying new spares.

It is difficult to track back through this maze to determine who should be accountable for mistakes. And no one is held responsible for the budget or cost of supporting a weapon system as a whole.

Management by Item

At the time these problems developed, Air Force Logistics Command was managing by item, not by weapon system. Experts on a given commodity—such as engine main bearings—are concentrated in one place where they can apply their talents to engine main bearings for all weapon systems.

This means, however, that support for a system is split. The chart above shows the division of responsibility for B-52 bomber subsystems among five Air Logistics Centers and other organizations in Systems Command and SAC.

"Item managers are, of course, item oriented," the Corona Require report says. "They are concerned about fill rates and back orders for their items, but they manage many items that support several different aircraft."

There is an AFLC system manager who serves as focal point for each system, but he did not have the information, authority, or staff to en-

sure that his system was being supported. Some of the system managers the Corona Require group visited did not know which items had not been bought for their aircraft because of the FY '82 turbulence.

The disadvantages of managing by item are that support for the system may be uneven, and that it is difficult to adjust priorities properly when budget requests are not fully funded.

Varying degrees of support for the H-1 helicopter in FY '82 illustrate. The Ogden and Warner Robins Air Logistics Centers funded their H-1 subsystems at 100 percent. San Antonio funded at 7.4 percent, and Oklahoma City zeroed out funding for the H-1 altogether.

The same year, San Antonio Air Logistics Center moved $5.6 million from the C-5 to support the lower-priority F100 engine. The unit price had shot up on unified fuel controls for the engine. A price quote—as low as Air Force negotiators thought they could get it—was about to expire. The F100 account did not have enough funds to cover the procurement, and needed a big transfusion in a hurry if the Air Force was to buy at the quoted price. The C-5 was San Antonio's only program that could absorb a loss of such magnitude. There was no data on where else in AFLC the money might be available, and there was not enough time to look.

The point, says the Corona Require report, is that there was no system for effectively reallocating spare parts money when requirements grow or when budgets are short.

Plans for Recovery

The Air Force has already acted to correct the worst of its spare parts data problems. A working group developed a new forecasting model, which has since been applied to the FY '84 budget request and to the FY '85 POM. (Tests show that it would have forecast a significant portion of the FY '82 requirements growth.)

A long-term program to revamp the spares requirements process and replace obsolete automated data-processing systems has already begun at Air Force Logistics Command. Other Corona Require suggestions are being evaluated.

Some of those suggestions are for organizational change, giving system managers real authority to manage their systems as a whole and establishing business strategy management councils at AFLC headquarters and at each Air Logistics Center so that changing requirements can be seen as they are happening rather than after they have taken place. "The Air Staff should not adjust funding for any year without obtaining an assessment of impact from the appropriate system manager," the report warns.

AFLC has already begun sweeping changes in the way it operates, and is now managing by weapon system instead of by item. *(See "AFLC Prepares for War," p. 46 of this issue.)*

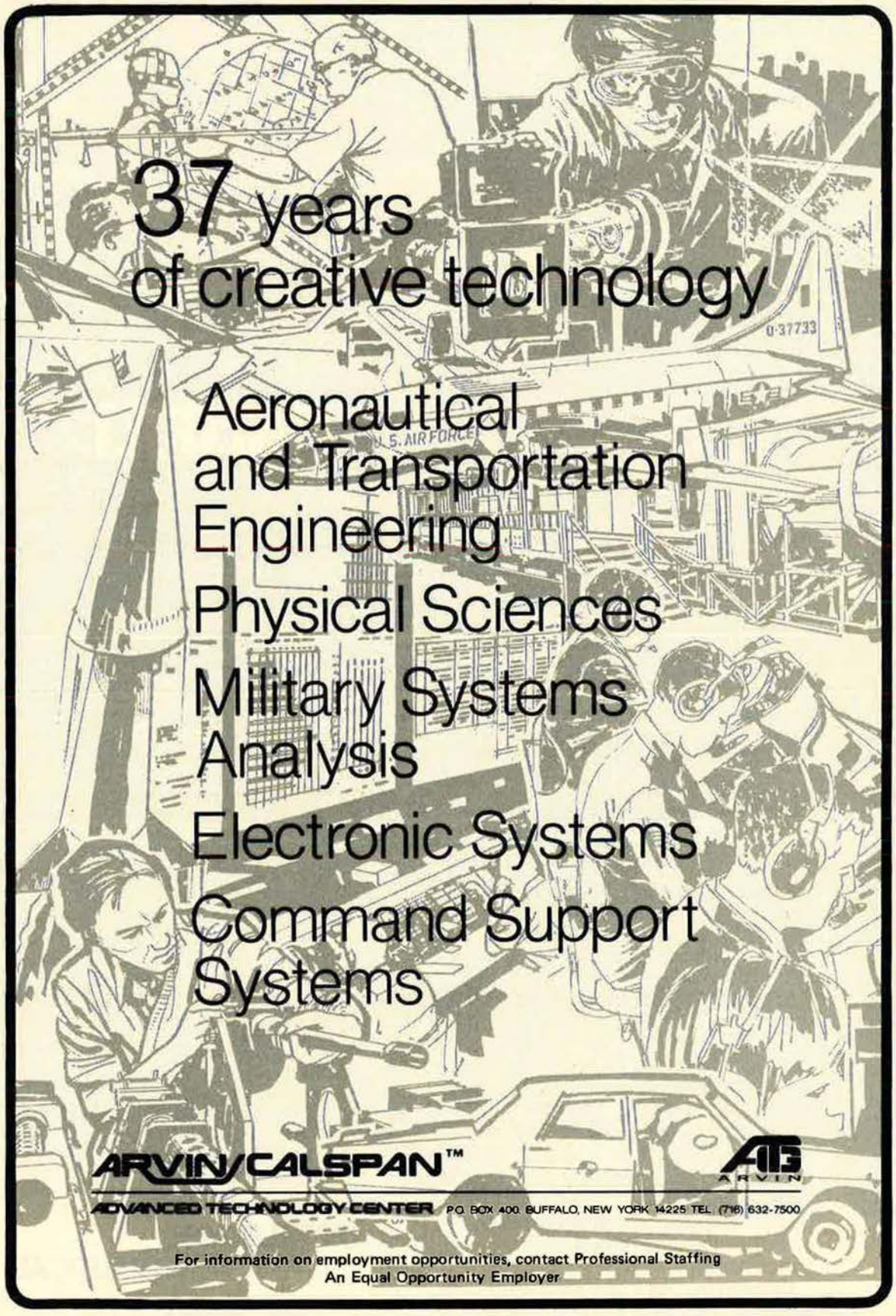
A key recommendation in Corona Require is for a formal system to prevent every Tom, Dick, and Harry from inserting unprogrammed requirements into the system at will. A firm support baseline, established after the Air Staff sets funding levels for each weapon system, would be enforced. Thereafter, any request for change would have to come through the program manager and be ruled on by an AFLC corporate review structure.

The study group also urges getting rid of the cumbersome peacetime/wartime distinctions for replenishment spares and computing to a single wartime requirement for parts.

A number of other changes are needed to ensure that the data in the system is realistic. One of these would be to value the spare parts inventory at replacement cost instead of original procurement cost. (A side benefit here will be that when USAF sells from its stocks to Foreign Military Sales customers, they pay replacement cost. At present, they get the parts for what the system values them at—the original acquisition cost plus inflation index—and the Air Force has to restock its bins at the current, higher price.)

"Implementation of other Corona Require suggestions will take place over the next several months," General Hansen promised the House Armed Services Committee, "and a final solution to the problem of forecasting aircraft replenishment spares will become a reality." ■

Programmed depot maintenance, seen here on a B-52, can include everything from stripping and painting to engine overhaul.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Beyond the $916 Stool Cap

Spare parts prices are a real problem. Solutions aren't as easy as some casual observers seem to think.

BY JOHN T. CORRELL, SENIOR EDITOR

THE most famous item in the running controversy about spare parts pricing is a little plastic end cap. It goes on the leg of a navigator's stool on the E-3A AWACS and, in 1981, the Defense Logistics Agency bought three of them for the Air Force at $916.55 each.

Little notice was taken, however, until earlier this year when SSgt. Charles R. Kessler, Jr., an AWACS crew chief at Tinker AFB, Okla., contested the $1,118.26 price—$916.55 for the part, plus a Defense Logistics Agency surcharge for acquiring it—on replacement caps he had ordered for his airplane. He squawked to the Zero Overprice monitor in base supply. The parts were returned, but the ensuing inquiry was picked up and played big in the news media.

The stool cap was one of numerous small items that received cursory attention when the huge provisioning list for AWACS was put together in 1979. The E-3A contractor, Boeing, estimated that the caps would cost $219.18 each, and the Air Force accepted that. The overall provisioning package price appeared reasonable in light of experience on previous packages. Such minutiae as stool caps were not assessed in detail.

When DLA bought the three in 1981, Boeing had to tool up to make them and the actual price turned out to be more than four times the estimate. DLA had only sketchy data on the part and did not understand exactly what it was buying.

The price was outrageous, of course, but Boeing had considerable expenses in preparing to produce the tiny order. One observer likens it to asking General Motors to custom build a door handle for a 1933 Chevrolet. It might be possible, but at a knee-bending price.

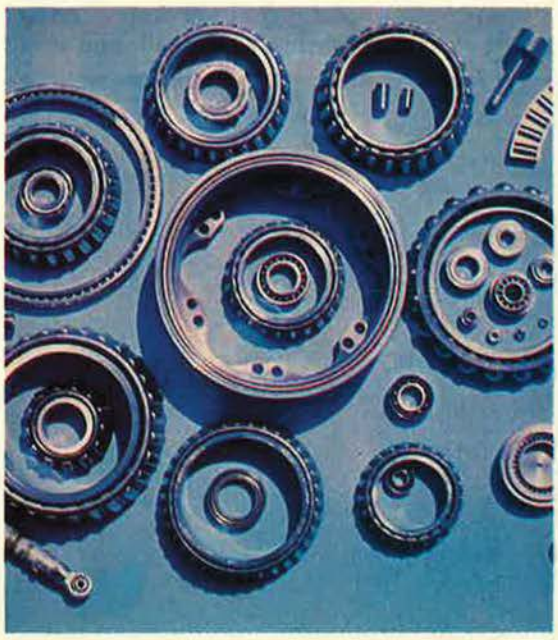
The proper approach on the stool cap would have been to go to a firm that specializes in the economical manufacture of such items.

When the story broke, Boeing was as horrified as the Air Force was. It won't happen again, at least not with this particular part. Everyone in the loop now knows a great deal about plastic stool caps, and DLA figures it can go to vendors that specialize in such work and deliver the part for under $10, including surcharge.

The stool cap is a bit player, although a spectacular one, in the raging flap about cost escalation of spare parts. Pentagon insiders say the Air Force is getting more than its share of the heat because the USAF parts management information system is better than those of the other services, so the data trail is easier to follow. Those sources also say that key elements of the story have had scant attention in the press.

The $1,118 end cap purchase, for example, was discovered and stopped because the Air Force had a Zero Overprice mechanism in place. The program has made other catches of a similar nature. It led to Ogden Air Logistics Center's reverse engineering a HUD template for the F-16 fighter, originally priced at $1,270 by the manufacturer. Ogden will make the templates itself for $67.27 each. Some connector assemblies will be bought for $100 because of a challenge at Keesler AFB, Miss., to the $279 quoted price. An E-5 at Randolph AFB, Tex., triggered the system on a computer disk pack listed at $644.84, and the Air Force is now getting disk packs at $67 each.

If anything, the Air Force is more



The Air Force is more concerned about spare parts prices than its harshest critics are.

concerned about spare parts prices than its harshest critics are, and is determined to improve the integrity of the spares acquisition process. But people who work the problem on a daily basis say that solutions will not come as easily as casual observers seem to think.

As one veteran participant puts it, an airplane is 300,000 parts flying in formation. Forecasting the replacement price of each part is one of many actions during acquisition of a new system. In a perfect world, each part would get full individual scrutiny and the price would be right on target. In the real world, there aren't enough people to do that, and they're pressed for time. They give their primary attention to the high-dollar parts and sometimes go with guesstimates on the smaller ones. When this provisioning estimate is low, it gets plenty of notice. Old hands say that roughly an equal number of estimates turn out to be high, and thus never make the newspapers.

Later on, the Air Force begins to buy the part and a real price is established. That, too, may escalate later, and for several reasons. The production line may have shut down, and there is big expense to reopen it *(see p. 58).* A particular material used may have become scarce. Part of the price increase may be attributable to inflation. Or a particular contractor, knowing the Air Force has to buy from him if it buys at all, may indeed be gouging the government.

A good solution to this would be to start out with good data, have multiple sources of supply, and buy from them on a fixed price contract. That is not easy to arrange.

Lloyd K. Moseman, Deputy Assistant Secretary of the Air Force for Logistics and Communications, testifying in Congress in April, said that it is costly to get data so Air Force engineers can determine whether an item can be procured competitively. In the case of the F-16 program, he said that data to make a determination costs a little under $50 an item for parts manufactured by the prime contractor and about $1,000 per item on parts from subcontractors and suppliers.

Even when the data is available, analysis is time-consuming. Mr. Moseman said it took General Accounting Office (GAO) auditors more than two years to complete an investigation on seventy-three parts. "We do not have the manpower available to sustain such a level of effort," he said.

The industrial base having shrunk over the years, alternate sources may not be available. Even if they are, the government may have to fight the prime contractor over what he considers proprietary data rights, or trade secrets, on the process to make the part. Successful challenge to such claims takes manpower. In the real world, Moseman said, it often pits a GS-9 from one of the Air Logistics Centers against a $500-an-hour lawyer from industry.

The Air Force's contracting work force has not grown in proportion to the increasing work load, and it is difficult to keep well-qualified people because job positions are not graded high enough. "To compound the problem," Mr. Moseman said, "OPM has issued tentative classification standards which will serve to further downgrade these positions."

Cost escalation often occurs on fixed-price redeterminable contracts. On these, the price can be recomputed later on for such reasons as high technical risk by the contractor or fluctuating costs for strategic materials. Unless the government bears down hard, this arrangement can become virtually a cost-plus-profit contract. In recent years, fixed-price redeterminable contracts have led to high cost growth because there is little incentive for the contractor to hold down costs.

Again, in the real world, the Air Force has not always gone after unit price integrity to the extent it might have in theory, but instead sought buy lot integrity. Taken as a whole, prices on a big package of individual spares ought to balance out and be about right.

Nobody knows for sure whether it would be cost-effective to try to police the price on every thirty-nine cent item in the total spares package.

Taking spares acquisition away from the services and letting the Defense Logistics Agency handle it does not appear to be much of a solution, either. DLA's system digested the $916 stool cap procurement in 1981 without a burp. The Air Force's Zero Overprice system caught it in 1983, and that's how DLA first learned of the problem.

After all is said and done, though, insiders acknowledge that the Air Force must give the spare parts pricing problem more attention. Curtailment in use of fixed-price redeterminable contracts is likely. Provisioning prices will be scrubbed down better than they have been in the past. Where it is at all feasible, spare parts will be broken out from the prime system contract and bought on competitive procurement.

The Air Force's Zero Overprice program is still in effect also, and more people know about it now. There will be sharp eyes watching for any cousins of the $916 stool cap that may be lurking around. ■

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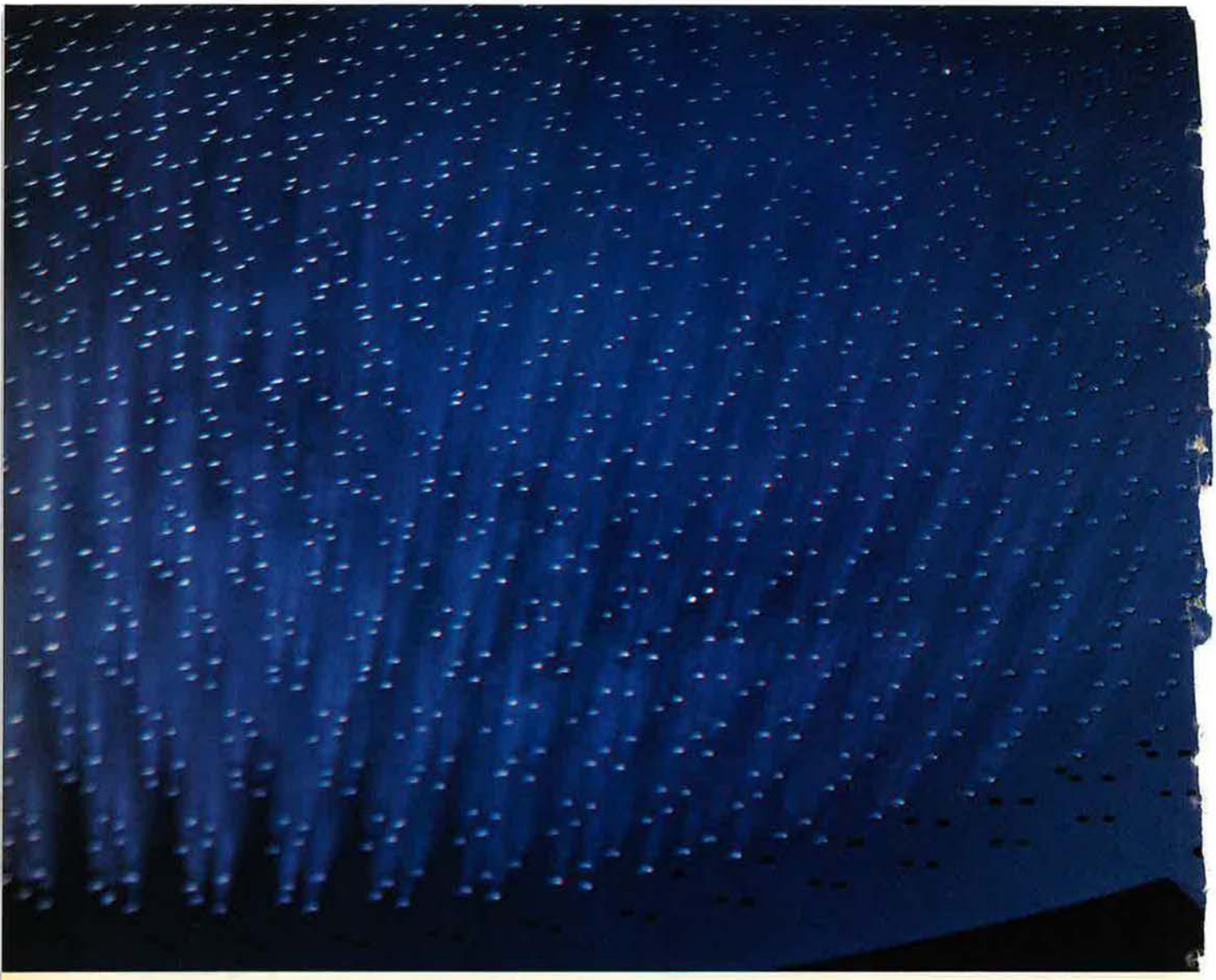

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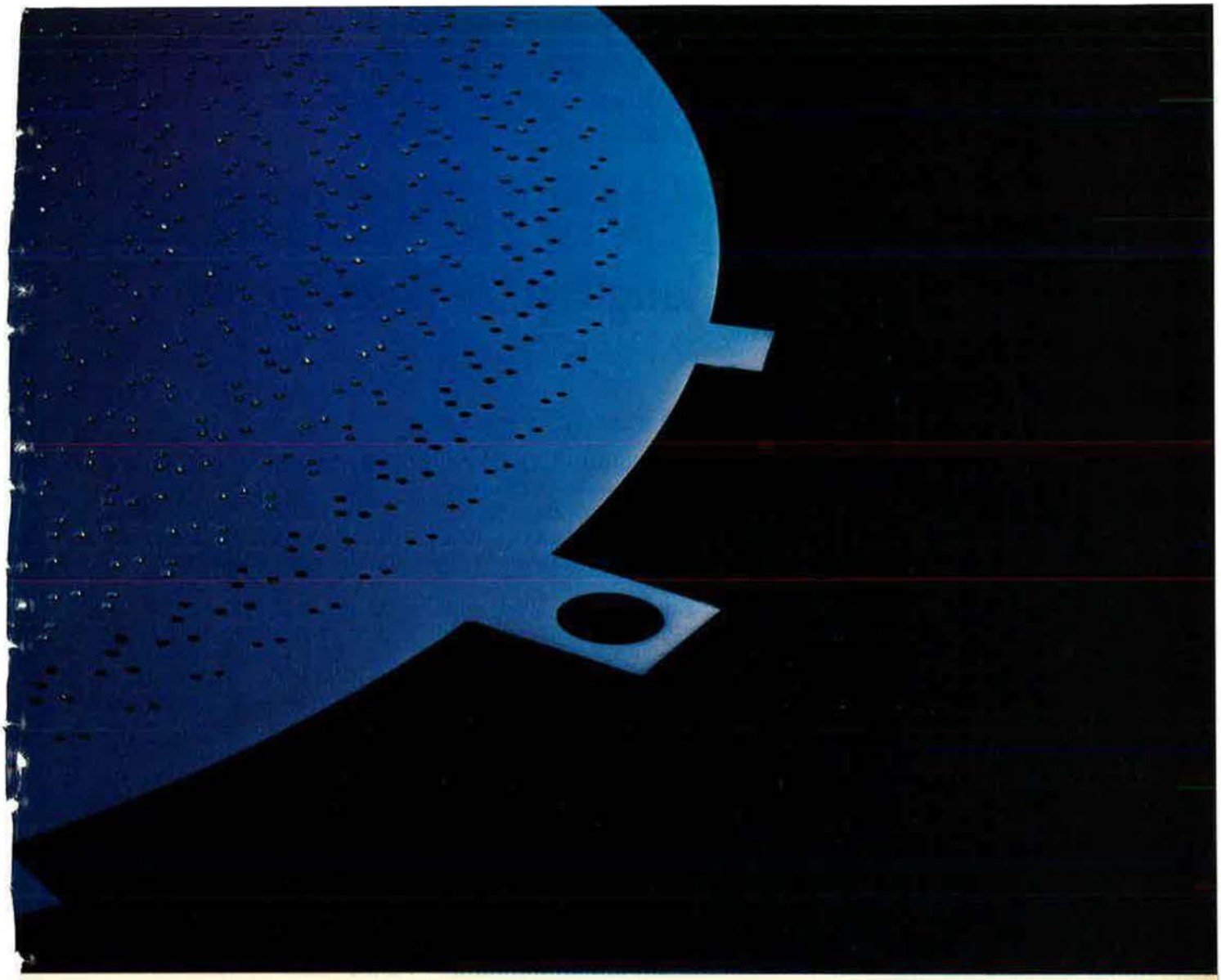

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WARFIGHTING IN EUROPE

Combat Success Hangs on the Logistics Tail

BY WILLIAM P. SCHLITZ, SENIOR EDITOR

"We believe that assured distribution of spares will translate directly into sortie production—in peace or war," said Maj. Don Klovstad of Hq. USAF's Supply Policy and Energy Management Division.

The officer is discussing the importance of the planned European Distribution System (EDS) to USAFE's future warfighting capability. This argument, among others, has won over Congress to include funds in the FY '83 Defense budget for the acquisition of two EDS aircraft and "an excellent chance" for an additional sixteen the following year. (An option also exists for forty-eight more.)

The reverse argument that has swayed Congress in favor of the EDS is that Air Force studies indicate that under the current distribution system and with full augmentation in war, more than 300 tactical fighters could be grounded each day awaiting intratheater redistribution of spares and engines.

Solving this problem through the deployment of EDS would increase sortie generation by about 800 per day, Air Force and Rand Corp. analysts estimate.

But the European Distribution System doesn't mean simply the purchase and utilization of aircraft. It will also entail an expanded C^3 role for the Logistics Readiness Center at Hq. USAFE at Ramstein AB in Germany in conjunction with MAC's Airlift Control Center. Finally, the plan calls for the "movement forward of a limited number of critical spares" from CONUS to storage in the European theater.

As visualized, warehouse capacity will be put to use at the EDS "Hub" at Zweibrücken AB in Germany and at the system's "Spokes" planned for RAF Kemble in the UK and Torrejon AB in Spain.

The eighteen aircraft would fly routes to USAFE and collocated operating bases in much the same manner that commercial air freight carriers service US cities with overnight deliveries.

"If we have the spare anywhere in our system, we would promise its delivery to a base within thirty-six hours—in peace or war," noted Major Klovstad. "In fact, EDS would be responsive and operate from the first day of war exactly as it does in peace," Major Klovstad added.

"The essential difference between a commercial air delivery service and the EDS is that the commercial concern awaits the decision of a customer. With the EDS, the decision to actuate is made within the system by the Logistics Readiness Center," the officer explained.

The Logistics Readiness Center would be paramount in the resupply systems operation, exercising its C^3 function. "We intend to utilize existing and future military and commercial communications systems in Europe to provide assured links and at maximum efficiency. For example, the computer at the LRC would talk directly to the computers at the bases and be able to call up what specific spares are in stock," noted Major Klovstad. "This should also help cut data-processing costs."

The eighteen EDS aircraft are to be owned and operated by MAC but under the operational control of the Commander in Chief, USAFE. Three crews consisting of pilot, copilot, and flight engineer/loadmaster would be assigned to each to ensure operations in a wartime environment.

The Air Force is considering either a two- or four-engine aircraft for the role. Other characteristics are more clearly defined. For example, it is to be a turboprop with a 5,000-pound cargo capacity and capable of operations from 2,000-foot runways. (The STOL capability is considered particularly important because of the requirement to resupply air bases that might have cratered runways.) The aircraft is to be equipped for rear-door loading—"true cargo aircraft without frills in the line of a miniature C-130 that could be loaded and unloaded quickly. It would also be self-sustaining and economical to operate," Major Klovstad stressed. The aircraft wouldn't necessarily be of American manufacture.

AFSC's Aeronautical Systems Division released a formal Request for Proposal in June and is encouraging manufacturer competition. Replies to the RFP were to have been received by August 5 with the source-selection process to follow.

"We've specified the 5,000-pound-load capacity so that the planes can carry aircraft engines," noted Major Klovstad. "Nor would the cargo be confined to aircraft spares. We anticipate that we might have to haul critical spares for the other services and, for example, to keep air base radio communications in operation." But, he stressed, the EDS is not designed to solve every logistics problem in USAFE.

"The term 'distribution' means moving all the matériel, people, weapon systems, etc., needed in war," the officer declared. "However, we have focused on tac air

spare parts and engines because our analysis has shown that special efforts in this area produce the highest payoffs."

In peacetime, six EDS aircraft would fly one route each. They would begin by departing in the evening from the extremities of the Spokes and stop at bases along the route to pick up spares. All aircraft would arrive at the Hub about midnight to exchange spares. The aircraft would then reverse the process and distribute spares along the same route. The six aircraft would service some twenty-plus USAFE bases. The remaining aircraft are to be used for training, with several undergoing maintenance at any given time.

In wartime, the routes would be expanded to augmentation bases with all eighteen aircraft in operation if possible. In all probability, the number of Hubs and Spokes would increase.

The Payoff

The key arguments for fielding the EDS are two: primarily the generation of combat sorties, and, perhaps equally as important in the final analysis, financial economies.

Studies of real-world data and capabilities have shown conclusively that up to 304 fighters a day will be grounded needlessly in a European war "because of wartime dynamics and the lack of logistics repositioning capability." The analyses are based both on wartime and peacetime scenarios.

It is pointed out that most USAFE air bases are currently dependent on fragile logistics links with depots in CONUS, which in wartime would certainly be overloaded or could be broken. Then, there is the critical time factor of airlifting spares from CONUS to consider. The plan, though, in either peace or war is to continue to use surface vehicles like trucks or other forms of transportation other than the EDS aircraft where it makes sense.

On the other hand, many of the theater resupply missions are currently flown by C-130s, which assuredly would be put to even more critical missions in a wartime environment—moving troops forward, for example. As for economics, it currently costs $1,800 per flying hour to operate a C-130. (C-141s and C-5s are even more costly—from $3,800 to $8,800 an hour. Another impressive figure determined by the studies: It would cost $419 million more to buy and operate C-130s than the EDS.)

Again, currently many spares are transported in surface vehicles, which in war may be destroyed or otherwise stymied by the destruction of bridges or the road net. In any case, ground movement is also time-critical.

Why not simply have great quantities of spares wherever they might be needed? This would be too costly, such quantities don't exist, and it would take years for their manufacture even if the money were appropriated for them.

Even now, the USAFE fighter squadrons would start a war with about equal numbers of spares on hand. Battlefield dynamics will vary throughout the theater, requiring some bases to fly more than others—bases that no longer would be safe havens. Spares stocks are bound to be lost to air strikes.

Thus, no one can anticipate at what rate the spares would be used up. The only practical solution is to be able to shift them quickly from the haves to the have-nots—hence, the EDS's emphasis on C^3. Someone in authority who is familiar with the overall picture must make those critical logistics decisions. (An interesting sidelight is that while the EDS has been specifically tailored for Europe because of the top priority there, it may provide the model for similar and more efficient USAF distribution systems in other theaters.)

Establishment of the EDS—though important—is just one piece of USAFE's logistics pie. Following is a brief survey of a number of others, not all of which interface with EDS to an appreciable degree.

EDS Benefits the COBs

There is almost universal agreement among USAF, the NATO allies, and the US Congress on the concept of collocated bases; that is, tactical fighter units deployed from CONUS sharing the bases of host NATO units. Although facing financial problems, the program is well along and everyone agrees that it is a sound idea both from a logistics and warfighting point of view.

Among reasons cited:

- Using already operational bases as augmentation sites is cheaper than building new main bases.
- The deploying CONUS units would be well dispersed—particularly strengthening the flanks—rather than bunched up at USAFE's main operating bases. They'd add about 2,000 aircraft to NATO airpower.
- The use of COBs would mean an even closer association with the allies. US units at the bases would not simply fly and fight from them. Operations would take place in conjunction with the host unit under the NATO command umbrella. "It is even conceivable," noted Lt. Col. Charlie Brewer of Hq. USAF's Directorate of Plans, "that US and allied aircraft might fly missions together. There certainly would be a lot of other joint activities at the COBs because of the very nature of the relationship."
- Reinforcement at the COBs would significantly strengthen the conventional defense of Central Europe.

Under the COBs agreements, the host nations provide use of such major facilities as headquarters buildings, dining halls, dormitories, runways, and taxiways. For its part, the US, in league with NATO, is working to provide such minimal essential facilities as dispersed aircraft parking and storage for a seven-day supply of aviation fuel and munitions.

Collocated basing is a sound idea logistically and from a warfighting perspective.

"USAF and NATO have identified some seventy COBs, a figure that could increase slightly as other sites are agreed upon," noted Colonel Brewer.

The advantages of the COB agreement to the US are obvious, but financing to equip the bases with Minimum Essential Facilities (MEF) is either being provided too slowly or is at an impasse. While the US Congress funds USAFE programs, and the host nations provide some prefinancing *(see below)*, the COB program comes under the NATO "Infrastructure" financing arrangement. And although many of the Alliance nations are in economic disarray, Congress believes that Europe should be contributing more and repaying previous prefinancing at a quicker rate.

"We're optimistic that NATO will provide more support for the COBs than it has in the past," noted Colonel Brewer. "However, it won't be sufficient to complete the program soon enough if Congress fails to relent and ante up some prefinancing."

Congress has authorized—but not yet appropriated—$44 million in the FY '84 Defense budget, far short of the $300 million Air Force planners have estimated will be needed to raise the COBs to MEF levels. (The COBs vary in development, from excellent facilities to "bare-base" austerity.)

"The MEF is simply to bring the bases to operational capability," said Colonel Brewer. "We need other things—for example, semi-hardened shelters to protect our aircraft. But the MEF must come first. Without that, our power to deter war in Europe is greatly diminished along with our credibility," the officer added.

With many Defense programs vying for scarce tax dollars, there are other shortfalls in regard to the COBs. While ANG and AFRES do deploy to their respective COBs, more training there as units certainly wouldn't be remiss to assure familiarity with the mission, flying environment, and host unit.

"At a minimum, ANG and AFRES units should deploy periodically to their COBs to, among other things, test out joint support plans to identify shortfalls," Colonel Brewer believes.

Some reserve force units are also equipped with aircraft that are being replaced in USAFE's inventory. This will eventually lead to serious problems in supporting maintenance.

Munitions stocks in CONUS have been earmarked as top-priority cargo in the event of the outbreak of war in Europe.

Despite the shortfalls, "We haven't thrown in the towel," commented Colonel Brewer. "We have contingency plans to support the COBs from USAFE's sponsoring Main Operating Bases. For example, where adequate fuel storage is lacking, we have air-portable fuel bladders that can serve," he added.

"Such interim measures are not substitutes for MEF since they would place heavy burdens on the logistics and transportation systems," noted Colonel Brewer. "Consequently, we are striving to provide the MEF so that the fuel and munitions are there when we need them."

Bombs and Bullets

"For munitions stocks in USAFE," Col. Hal Phillips said, "in terms of quantity we're in as good shape as we've ever been." Colonel Phillips is Deputy Chief of Hq. USAF's Munitions and Missiles Division at the Pentagon. "While much of the stockpile consists of older iron bombs, 'smart' bombs and other state-of-the-art weapons are in development and production.

"We do have one problem and that is a shortfall of storage capacity which we are working to correct," he added. "While USAFE's Main Operating Bases are mostly equipped with hardened munitions storage facilities, we're adding to that capacity and are undertaking a building program to provide such structures at the COBs and other operating locations," noted Colonel Phillips. "Until the COBs are so equipped, we're testing the feasibility of using sealand-type container vans both for shipping bombs and their storage at the COBs.

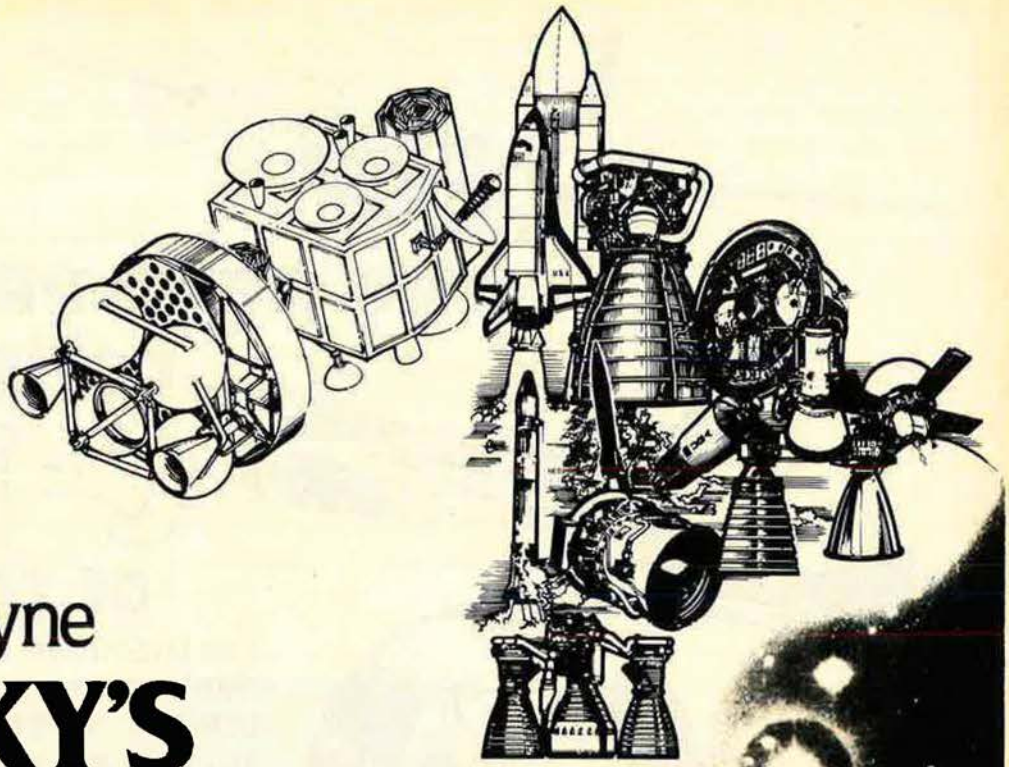
"Our vans will be designed to be unloaded through the sides for easy access rather than at either end. We can protect these vans by building earthen barricades around them," Colonel Phillips added.

"Once hardened storage facilities are ready at the COBs, we'll prestock them," commented munitions staff officer Lt. Col. Dave Corley, "and the container vans can be relegated to a transport role. Until then, munitions stocks in CONUS have been earmarked as top-priority cargo in the event of war."

To finance the construction program, some $113 million has been programmed in USAF's five-year defense plan.

"Bombs don't come from the factory ready for use," noted CMSgt. George Lander, Conventional Munitions Superintendent with the Munitions and Missiles Division. "Depending on the configuration, up to seventeen components—fuzes, fins, boosters, and the like—have to be fitted to the iron. While this will continue to be a manpower-intensive activity, we've been experimenting successfully with air hoists and a conveyor to automate the buildup process. The objective is to speed up building bombs and get them to the flight line quicker and with fewer people," the Chief added. The bomb assembly system is also portable for decentralized operations, adding flexibility and survivability.

Colonel Phillips explained that the use of EDS wouldn't lend itself specifically to the distribution of most major munitions end items to USAFE bases. "Generally, it would not be practical to use the types of aircraft being considered for the EDS to carry such heavy-weight ob-



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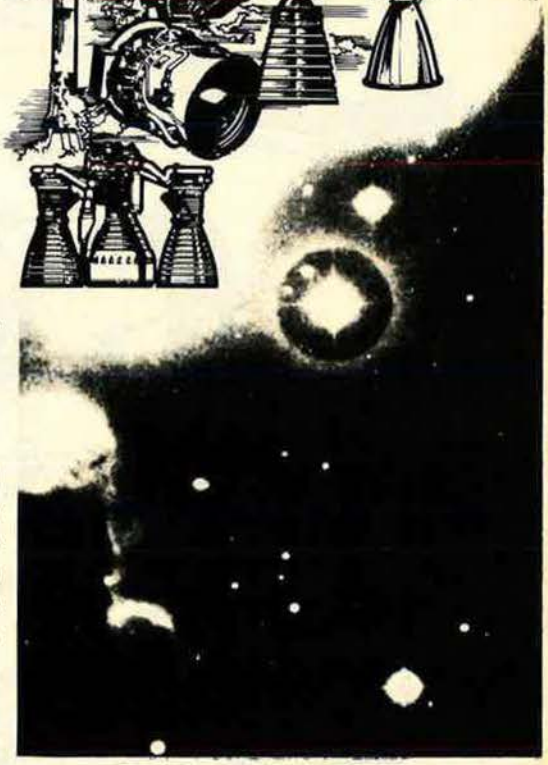

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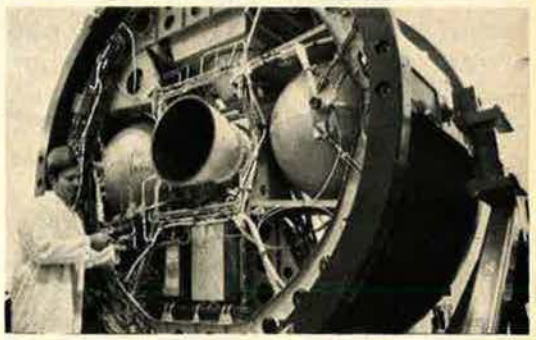

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jects," Colonel Phillips noted, "although we could make use of the system to transport such smaller items as bomb fuzes and missile guidance/control assemblies."

"In many respects, we share the problems confronting the distribution of spare parts to keep airplanes flying," noted Colonel Corley. "In a large measure we can preposition assets, but at a certain point this becomes self-defeating in terms of cost. In war we're prepared to improvise, counting on rail, truck, or MAC transports to haul bombs and missiles to where they're needed. That would be top-priority cargo," he added.

Colonel Corley pointed out that heavier munitions are generally shipped to Europe by sea. "In our contingency planning, the combat commands have preidentified munitions resupply needs to such appropriate transportation agencies as MAC and Military Sealift Comand. Provisions have also been made to replenish the COBs with munitions from the Main Operating Bases and central storage sites," he added.

"We're on the road to the acquisition of minicomputers as the basis of a combat ammunition system that would store data on where everything is and what is in transit," commented Colonel Corley. This information would then be immediately available to munitions personnel assigned to the theater ammunition control point (ACP) at Ramstein AB in Germany. When air tasking orders are under development or requests for air strikes are received from the Army, Navy, or allies, these experts work in conjunction with Operations Command and Control and Intelligence to advise on the type and availability of weapons for a particular target.

"For example, laser-guided bombs to take out bridges," noted Colonel Corley. "With a specific weapon available only at, say, RAF Upper Heyford rather than RAF Lakenheath, ACP personnel would advise the Allied Tactical Operating Center (ATOC) so that appropriate revision to the tasking order could be considered. For example, tasking could be changed to RAF Upper Heyford or, then again, a Lakenheath aircraft might be flown to RAF Upper Heyford for subsequent sortie with the specified munitions load. This option may be the most expedient and cheapest course of action when considering the alternative of shipping required weaponry to the aircraft parent wing," he added.

Under mutual-support agreements within NATO, allied tactical aircraft could be armed with interoperable weaponry at USAFE air bases. Likewise, US aircraft might land at allied bases for fueling or arming, Colonel Corley pointed out. Repayment would be made later in kind or by financial settlement. "This logistics arrangement is not unique to munitions and includes any agreed-upon warfighting commodity," Colonel Corley said.

In an emergency, bulk aviation fuel could be airlifted to forward operating locations.

The Fuel Situation

If spare parts are essential to keep sortie rates up and munitions stores maintained to assure warfighting capability, the third element of the triumvirate in keeping aircraft operational must surely be aviation fuel.

USAFE and the Central European allies are dependent on an extensive system of 6,600 kilometers of pipeline that runs from off-loading oil tanker facilities on the Channel coast and throughout the Central European NATO nations.

In addition, the US Army operates a pipeline that runs across France and into Germany and ties into the Central European Pipeline System. The entire network would operate in war just as it does in peace, noted Lt. Col. Doug White, Deputy Chief of the Energy Management Branch, Hq. USAF.

Colonel White answered the most immediate question concerning the pipeline system: "Each country it passes through has developed rapid repair capability." The Germans, for example, conduct exercises in quick repair of the pipeline, the Colonel noted.

Particularly in forward areas, there are prepositioned materials for that purpose, the Colonel said.

At most of USAFE's Main Operating Bases there are "cut-and-covered" storage tanks that are dug in, capped in concrete, and paved over with several feet of earth. "They are very difficult to see from the air and could probably survive anything but a direct hit from a 'smart bomb,' " noted Colonel White. About ninety-five percent of the MOB storage facilities are either hardened or semihardened, Colonel White estimates.

"Segments of the pipeline run into the MOBs, with the COBs supplied mostly by truck or train," the officer said.

"We've considered the movement of bulk fuel by airlift but it's not practical," Colonel White noted. "But we do have on hand for contingencies bulk fuel delivery systems designed for the C-130 that could be installed in C-141s and C-5s. These could be used, for example, for the emergency resupply at the forward operating locations or to augment fuel at the COBs," he added.

In a related matter, according to Colonel White, the "in-shelter" aircraft refueling program USAFE has begun is on track. The prototype is in operation at Spangdahlem AB in Germany. The objective is to reduce dependence on highly vulnerable refueling trucks and hot pit facilities at air bases.

The system consists of a buried pipeline loop extended into each of four aircraft shelters. The pipeline is equipped with isolation valves to limit the number of shelters affected if the pipeline is cut in one or more places.

Tests conducted last year at Tyndall AFB, Fla., demonstrated that buried pipelines were virtually invulnerable except for direct bomb hits. A NATO group is working up minimum refueling standards that will be the criteria for all bases.

Also in use at heavy-traffic MAC mission bases like RAF Mildenhall and Ramstein AB is a "constant-pressure, high-volume system to minimize turnaround time in refueling transports," Colonel White reported.

USAFE Civil Engineering

"With negotiations under way between the US and USSR that might lead to a lesser nuclear presence in Europe, Congress is trying to minimize the initial ground-launched cruise missile construction investment," said a top Air Force civil engineering officer, Col. Frances DeMartino.

"Given the heavy investment in GLCM facilities, Congress has been reluctant to finance permanent quarters for dependents and may insist that crews go to Europe on unaccompanied tours of twelve, thirteen, or fifteen months. This could give the Air Force serious problems in retention, recruitment, and morale," noted the engineering officer.

"It certainly would be more costly in terms of the additional people who would have to be trained and equipment purchased as well as added transportation costs in moving people at much shorter intervals," the Colonel added.

The demonstrators at RAF Greenham Common, the first European GLCM site, "have not impacted on the project," commented Colonel DeMartino, "which will meet its initial operating capability goal on schedule."

In terms of supporting the EDS, blue-suit civil engineers have a limited role. "The Air Force has a request for military construction funds to provide warehousing at the EDS hub at Zweibrücken AB in Germany and Torrejon AB in Spain. RAF Kemble already has such a facility available," the Colonel said.

As for USAFE warehousing in general, "A serious shortfall exists both for storing operating stocks and war-readiness material stocks," noted Colonel DeMartino.

"We've been trying to address this through the military construction program for several years. Congress is convinced that the Europeans should be contributing more in this area and so we have had little success in getting those types of facilities," the engineering officer said. There is also a shortfall of adequate quarters and dormitory space in Europe. "And while Congress has been very supportive in this regard, there is still the question of how much the allies should be providing," noted Colonel DeMartino.

There are indications, though, that both Congress and NATO "Infrastructure" (how the Alliance provides financing) will fund construction projects at the collocated bases (COBs). For the US's part, this would consist of "prefinancing" money that eventually would be reimbursed by NATO, which operates in five-year plans.

"It looks as if US Air Force leaders will achieve some success with NATO—which is concluding a mid-term review of its projects—and on Capitol Hill to break the impasse on COB funding. Both are aware that the COB plan of reinforcement is of the highest priority," the engineering officer said.

"There is also a request for $66.7 million to upgrade two air bases in eastern Turkey," noted the Colonel. "Essentially, these would be equipped as COBs to give NATO sorely lacking capability in that area."

Battle Damage Repair and Maintenance

In 1980, AFLC published an Aircraft Battle Damage Repair (BDR) program concept paper that basically incorporated the lessons learned in Southeast Asia, the Israeli experience, and concepts pioneered by the RAF (said to have been reinforced by the Falklands War).

The objective—already highly publicized—would be quick fixes to turn around a battle-damaged aircraft for at least one more sortie.

Another objective would be the capability to fix seventy-five percent of the damage in twenty-four hours. "To achieve this we need to know what to do," noted Lt. Col. M. "Butch" Clements of Hq. USAF's Maintenance Directorate. "For example, we might develop portable video devices with probes and computer-style memory banks. The device could be used to assess damage to systems below the aircraft's skin," he added.

"Then the major question would be what capability is at hand to repair whatever damage is discovered and what the aircraft is capable of after whatever repairs can be made," noted Colonel Clements.

The concept paper of 1980 was the basis for a AFLC Program Management Directive in 1981. The PMD called for the development of technical orders, established training programs, and authorized stocking tools and matériel to undertake repairs. "The subjects of AFLC's directive were its combat logistic support squadrons," commented Colonel Clements, "which now have the repair kits and know-how to use them. The concept has spread to USAFE, which now has repair kits patterned on the CLSS models."

USAFE's kits are mounted on trailers that can be wheeled from one base TAB-V semihardened shelter to another, transported to other areas (such as emergency airstrips set up on Germany's *Autobahn*), or even pushed aboard aircraft for airlift. The trailers would be self-supporting, even to a portable power-generation unit.

In USAFE, technical manuals for rapid repair exist for the F-4 and F-5, with those for the A-10, F-111, and F-16 under preparation.

For their part, the CLSSs—to underscore how well along the program is—have defined deployment packages. Reflecting this state of readiness is that the squadrons have been tasked by Hq. USAF Operations and Plans based on this capability and have already demonstrated it during deployments.

Following suit, USAFE has designated technicians or specialists for aircraft damage repair. As such they have received some training to act as the nucleus on the base level. "The USAFE effort is making headway, with NATO tactical evaluations of the capability to begin in December 1984," Colonel Clements underscored.

(A corollary to rapid aircraft repair is that of rapidly repairing battle-damaged runways. In the news have been USAFE's experiments

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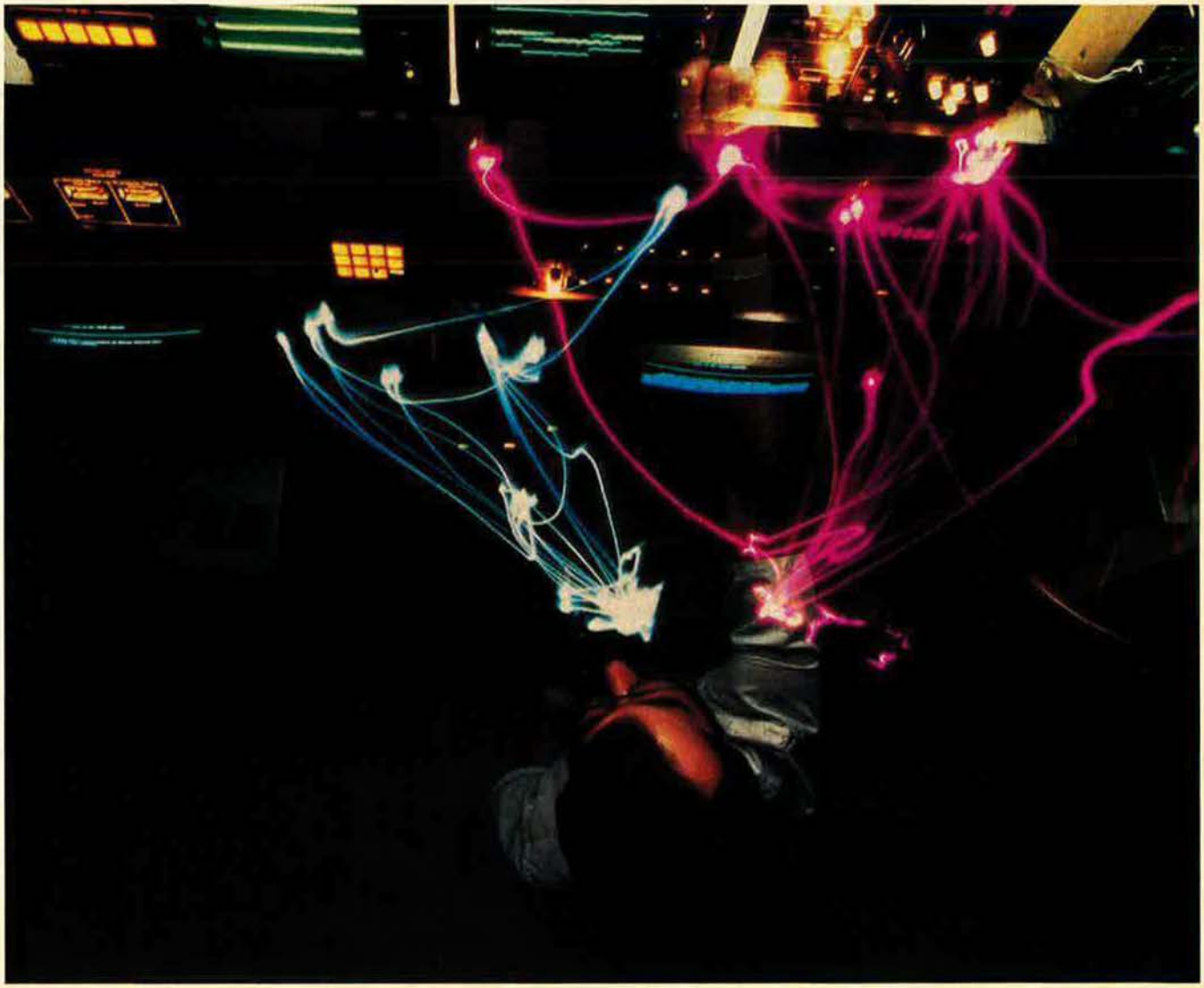

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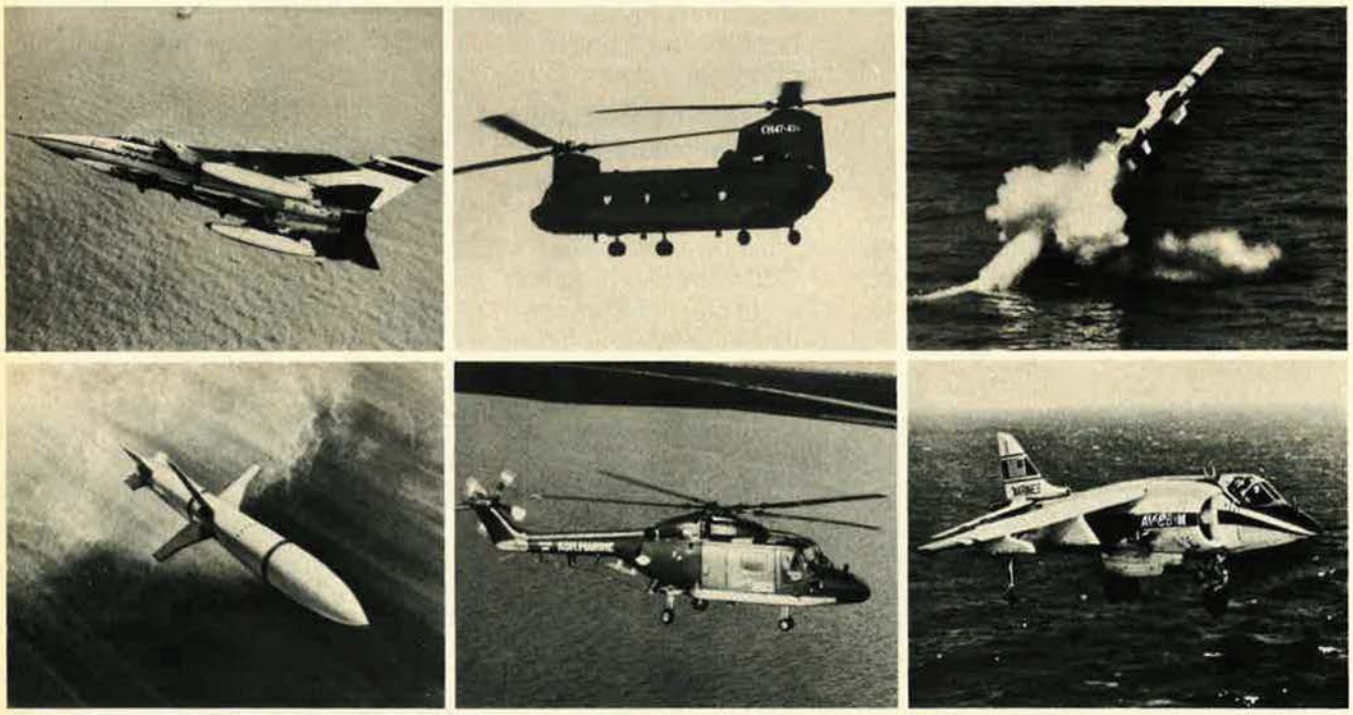

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(With the aluminum mats, human muscle did most of the work. This is significant when teams are suited up for chemical warfare. With the slabs, fewer people are needed—about ten vs. nearly thirty. A high-speed saw is used to shape the slabs to size.)

Concerning battle-damaged aircraft, USAFE planners are looking toward expanding the program to include other NATO aircraft besides F-4s and F-16s, which are common to both.

"By the late 1980s, the BDR program will include some knowledge of NATO aircraft for base-level quick fix," noted Colonel Clements. "The first significant funding toward this objective is in the FY '83 budget," he added.

"Individual units will always have to load, launch, recover, and repair their aircraft," cautioned Colonel Clements, "but we must change the way people think about maintenance."

The idea "is to get away from the traditional three levels of maintenance and emphasize the distinction between on-equipment, off-equipment tasks—what can be done at the aircraft and what requires shop work," Colonel Clements related. "We must also revise training away from subsystems—hydraulics, fuel, etc.—to emphasize the aircraft as a whole," said Colonel Clements, adding, "in fact, we must encourage future tactical fighter contractors to design in flight-line, sortie-producing packages."

Finally, in a carefully thought-out revision in maintenance policy, the Air Force is shifting some kinds of CONUS programmed depot maintenance (PDM) forward to a "crescent" in NATO. "For example," noted James Glidewell, "some kinds of modifications and corrosion control are being conducted on A-10s at RAF Kemble by a small British work force under blue-suit supervision. The work has to be done and we'll save thousands of dollars by not having to bring the aircraft back so often to CONUS for this and other reasons," he added.

Another example is the full PDM work being undertaken on C-130s in Italy and on F-4s in Spain.

The ultimate objective is to get the aircraft back on the line—or in the war.

Cross-Servicing Aircraft

Finally, within the scope of USAFE and NATO logistics support and concepts is the Aircraft Cross-Servicing Program, aimed at standardization and interoperability within the Alliance.

The program calls for fighter or tactical reconnaissance aircraft to be refueled and rearmed at selected NATO/USAFE bases that may or may not have stationed there the type of aircraft to be serviced. The objective is to generate sorties that would have been lost when the aircraft was diverted from its home base.

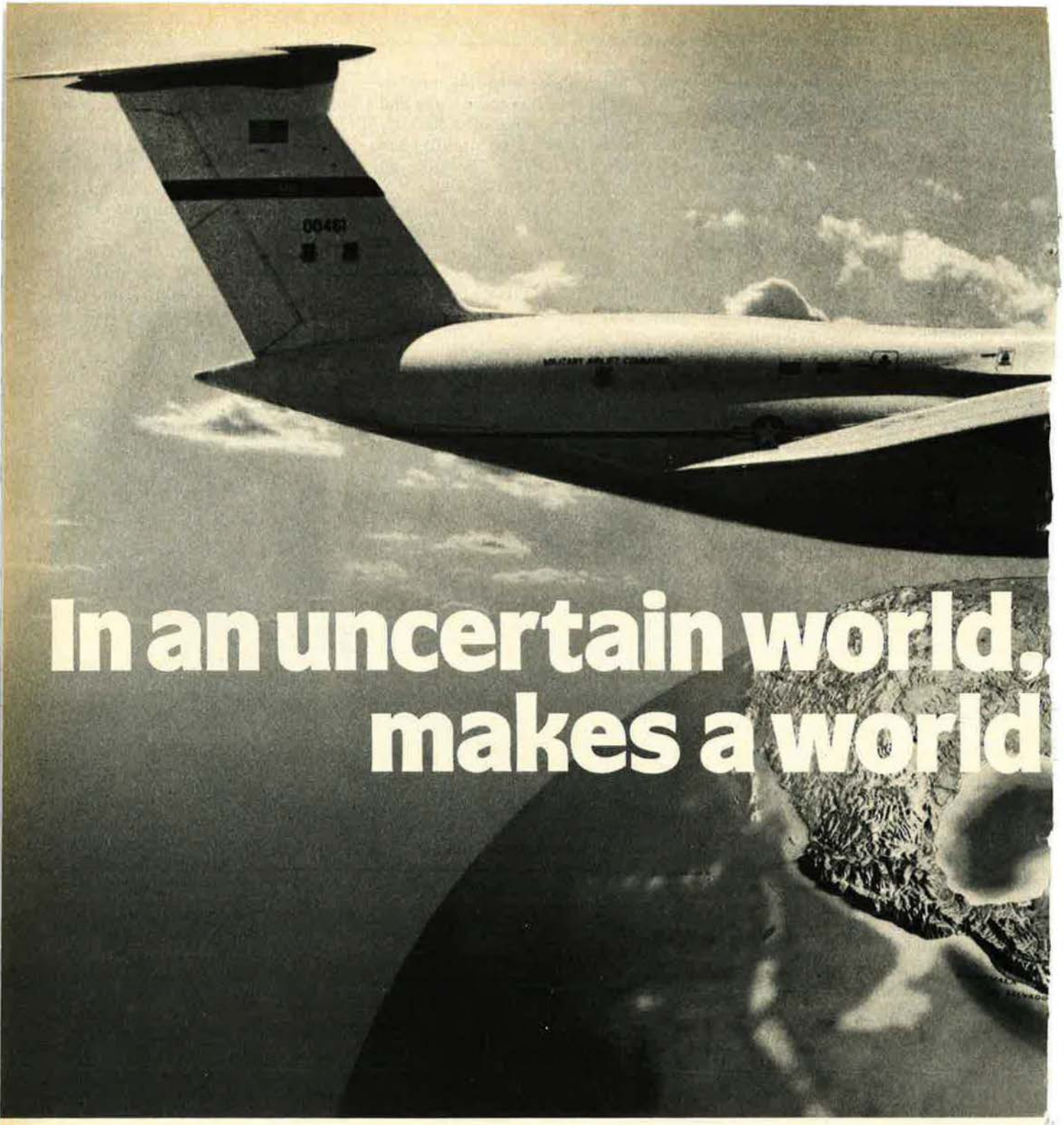
While "Stage A" of the program calls for refueling only, "Stage B" includes refueling and rearming or film reloading, with the aircraft then tasked for another sortie.

USAFE's contribution to the program provides for ten different types of allied aircraft from eight nations to be serviced at Main Operating Bases; eight types of US aircraft at bases of six allies; and five types of US aircraft at dissimilarly equipped USAFE Main Operating Bases.

Rapid battle damage repair, above, is a concept pioneered by AFLC that has spread to USAFE. Major components are repair kits containing the required tools and matériel, left.

According to Hq. USAFE, tactical evaluations and operational readiness inspections have steadily improved since the program's inception in January 1978 and will continue to expand through FY '85.

In warfighting follow-on mission tasking once the allied or US aircraft is serviced, the Allied Tactical Operations Center will be responsible for informing the base of the type of target. In turn, the base's command personnel will determine in conjunction with the aircrew the best type of ordnance available to accomplish the mission. ■



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Lockheed C-5

UP FROM NIFTY NUGGET

The nation's ability to mobilize for war has improved since 1978, when a landmark exercise found Murphy's Law in full sway.

BY JAMES W. CANAN

THE United States finally seems to be rounding into shape to mobilize, if need be, for war. Pentagon officials who plan for mobilization are hardly overconfident, though. The myriad dimensions of assembling and deploying immense measures of manpower and material on very short notice, under stress, are enough to daunt the senses and preclude perfection. Shortages of supplies, bottlenecks of production, logjams of logistics, and confusions of communications still threaten. But it is clear that the US has come a long way in the past five years.

That time frame is germane. In October 1978, the US conducted its first full-scale simulated mobilization exercise in many years. Called Nifty Nugget, it was a twenty-one-day marathon involving twenty-four military commands and thirty civilian agencies in an attempt to reinforce US combat units in Europe. It might better have been called Fool's Gold for the fiasco it was. Its lesson was inescapable: The US was simply not prepared to sustain combat in Europe. Line outfits would have gone begging for lack of backup. Something had to be done about that. Now, to all appearances, a great deal has been done.

Substantial Progress

"We've made substantial progress since then," Defense Secretary

The C-5A wing modification is cited in Air Force circles as one outgrowth of the furor created by the obvious shortfalls revealed by Nifty Nugget.

Caspar W. Weinberger told AIR FORCE Magazine. "There has always been a mobilization plan—who does what and goes where. Now we have, in addition to the plan, the means of carrying it out. Our units are combat-ready, our spare parts and ammunition situations are much better. None of that translates automatically into mobilization capability. But if you don't have it—if you don't have readiness—then you can't mobilize. If you do, you can."

Fred C. Iklé, Under Secretary of Defense for Policy and Chairman of the Defense Department's Military Mobilization Steering Group, is also upbeat, with caveats. "We're doing better," Iklé affirms. "We have a good team working on mobilization. Things have improved quite a bit in the Air Force, for example, with respect to airlift capacity, mobility, and spare parts. But we haven't moved as fast as we'd hoped, and we still have quite a way to go."

After Nifty Nugget, there was no way to go but up. That exercise should stand forever as the mobilization model for Murphy's Law. Almost anything that could have gone wrong did. It laid bare, as one high-ranking DoD official recalls, "an awful lot that was wrong—terrible mismatches between our deployment requirements and our ability to manage them, no central mechanism for implementation and coordination of policy."

Yet the exercise ranks high, historically, among national blessings in disguise. From not-so-Nifty Nugget have come some nifty developments. It influenced the executive branch and Congress to stop taking mobilization for granted and to start tending to its prerequisites. Thus it led directly to draft registration; a realistic look at—and remedial actions for—the dwindling defense industrial base; much greater attention to airlift, sealift, and military readiness across the board; and the scheduling of biennial mobilization exercises to pinpoint problems recurrent or new.

Even now, success in mobilizing would depend on hard work—and some luck.

All such developments were driven, too, by the Soviet invasion of Afghanistan and the taking of US hostages in Iran, both in 1979. The Rapid Deployment Joint Task Force came into being to protect US interests in that part of the world, and its creation sharply underscored the need for much more airlift and sealift. However, Nifty Nugget had already spotlighted US airlift and sealift shortfalls, not only with regard to reinforcing NATO, but also in the context of war in Europe probably spreading to Southwest Asia, or the Far East, as well.

That is why Nifty Nugget gets the main credit in Air Force circles for having justified the panoply of USAF airlift and air mobility programs—C-141 stretch, C-5A wing modification, C-5B development, KC-135 reengining, and KC-10 procurement. "Nifty Nugget," asserts an Air Force officer, "conveyed the importance of those programs to OSD civilians and Congress. It gave us great political leverage." Adds another officer: "The military had known for a long time that there were big shortcomings in mobilization capability. Nifty Nugget brought them home to the civilian sector of the government. It woke some sleeping giants."

Airlift and Other Deficiencies

Well it might have. The nitty-gritty of Nifty Nugget remains classified. But Pentagon officials confirm reports that US airlift incapacity was a major reason for its grisly outcome. The paper-*cum*-computers JCS exercise (no troops or supplies actually moved) postulated that US line units in Europe—many of them understrength to begin with—be reinforced by some 400,000 men, 350,000 tons of ammunition, and what not, from heavy weapons to medical supplies, from CONUS. Much of all that never got there. What did arrive was expended in a war that was lost, hypothetically, because of too little, too late.

USAF officials acknowledged afterward that in order to have ferried all the outsize equipment destined for the battlefronts via airlift, Military Airlift Command would have needed maybe ten times its seventy-seven C-5As. Spare parts for the Galaxys were found to be in surprisingly short supply in Europe, contributing greatly to poor turnaround performance. The airlift part of the exercise, all of a piece with the rest of it, suffered from foul-ups of logistics coordination as well.

Addressing the airlift dilemma, a June 1980 Defense Department postmortem report on Nifty Nugget said:

"Nifty Nugget highlighted . . . problems with strategic airlift. For example, when plans for several [geographical] regions had to be implemented simultaneously, aircraft had to be reallocated. Collectively, these plans called for many more aircraft than could be made available. . . .

"A strategic airlift shortfall was apparent, even after MAC was augmented by Reserve Component crews and by US commercial aircraft drawn from the Civil Reserve Air Fleet (CRAF). Further exacerbating the problem is a current shortage of spare aircraft engines and other maintenance items which are needed to maintain the MAC fleet at the high rate of usage assumed in the [US mobilization]

plans. There is also a significant shortage of the materials handling equipment required for efficient aircraft loading."

The DoD report also noted that Nifty Nugget's airlift capacity "was reduced by the unplanned need to return aeromedical evacuation equipment. A lack of adequate intheater medical treatment forced the evacuation of many casualties who should have received all of their care there. . . . For every three evacuation missions to CONUS, one aircraft was required to return aeromedical kits to Europe. After all available kits had been used, many patients were evacuated in aircraft configured for inflight medical care but lacking galleys, latrines, and airline seats."

Such are the shambles of war, even when run on computers. But there was a great deal more to be discerned in the rubble of Nifty Nugget. As related by the report, in summary:

Inadequacies of ships and ports for taking on cargo in CONUS and offloading it in Europe; haphazard liaison among DoD's three Transportation Operating Agencies (TOAs)—MAC, Military Sealift Command, and Military Traffic Management Command; civilian agencies "not prepared for a Nifty Nugget emergency" because they had regarded mobilization cavalierly and knew too little about its demands; and ditto for the military service secretariats and the OSD staff.

Moreover, said the report, emergency authorities given to DoD and the civil agencies were "neither comprehensive nor balanced," and could not be implemented, in any event, short of a declaration of national emergency. "No comprehensive document describes all the options available for executive action," and "the President does not have balanced authorities to mobilize manpower." Lacking a Selective Service registration system, there was no way to draft civilians quickly or, indeed, at all. Furthermore, no one seemed to have any idea of how a quick-fix draft or call-up of reserves would affect the labor market, vital industries, and the nation's economy.

Problems with the labor market and the industrial base had begun coming to the fore in Petite Nugget, a week-long exercise immediately predating the onset of Nifty Nugget. It examined industry's ability to tool up and amass long-lead items for wartime surge production. That ability simply wasn't there.

"Industry," declared the DoD report, "probably cannot provide additional new equipment during the early months of a short-warning conflict. We concluded that industry response to DoD's needs was slow, and that sizable expenditures would have to be obligated in peacetime to speed it up."

In 1980, the Proud Spirit exercise was run with more relaxed rules, but the results were still disappointing.

There was a bright side. USAF Gen. David C. Jones, then the JCS Chairman, expressed it this way: "We learned many valuable lessons by exercising the system in a no-fault [meaning no one gets fired for failure] climate," Jones said. "We have a much better appreciation of the strengths and weaknesses of our national mobilization apparatus, and a clearer understanding of where to focus our efforts for further improvement."

The First Fixes

The first steps on the long road to rectification were creation of the DoD Mobilization Deployment Steering Group under Iklé's predecessor, Robert W. Komer, and the Joint Deployment Agency as an arm of the Joint Staff. The MDSG went right to work on a new Master Mobilization Plan; the JDA, on integrating the plans of all three TOAs into a single transportation management system called the Joint Deployment System. Its main function was to match MTMC's movements of military units and material to embarkation air bases and seaports with MAC and MSC schedules for departures and arrivals of airlifters and sealifters. Such coordination is so crucial to the success of mobilization that many Pentagon officials single out the JDS as, in the words of one, "our most important heritage from Nifty Nugget."

The same can be said, on the civilian side of the government, for the Federal Emergency Management Agency. Created in 1979, FEMA has much broader jurisdiction and greater power than had its predecessor, the Federal Emergency Preparedness Agency. It is structured to be the action agent of the White House in time of crisis. Its first assignment, in concert with the National Security Council, was to put together a Federal Master Mobilization Plan—the first of its kind in more than twenty years—for expeditious reference by all hands, from the President on down.

Proud Spirit

All such innovations were scarcely in place when, in November 1980, US mobilization prowess was put to another test. This second JCS-DoD exercise was called Proud Spirit 80; the FEMA exercise, Rex Bravo 80. They lasted thirteen around-the-clock days. Once again, the scenario was one of heightening tension in Europe. But the 1980 exercises put less pressure on the system. For example, they did not embody simulated combat in Europe, only a crisis atmosphere. Nor, obviously, did they raise the specter of a European war spreading into another region. The mobilization gamers were given other breathers too.

Proud Spirit was conceived in the assumption that most US civilians in Europe had come home in an orderly manner at the onset of tensions. This arbitrary setup let the Proud Spirit mobilizers give the slip to one of Nifty Nugget's most horrendous happenings—the hurry-up, helter-skelter evacuation of nearly 1,000,000 US civilians from Europe, and their arrival, en masse, at US air bases already laboring under logistical duress.

Given such relaxation of rules and conditions in the 1980 exercises, their results were difficult to assess in comparison to those of Nifty Nugget. But it is fair to call them disappointing. While there were some improvements of logistics, personnel, and coordination, prob-

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lems of amassing and staging manpower and supplies seemed almost as profound. For example, according to one report, M-16 rifles were in such short supply, and so inflexible of pace in US production, that Proud Spirit's procurement managers considered ordering them from a plant in South Korea. It wasn't necessary only because there was no "war."

Proud Spirit was also fraught with problems peculiarly its own. One featured a computer in the World-Wide Military Command and Control System (WWMCCS). Under the crush of military commanders' questions about the readiness or whereabouts of a wide range of units, the computer sidetracked such queries into its storage "buffer" to await retrieval after the rush hour. But it took twelve hours for the computer technicians to call up the information, which meanwhile had become yesterday's news. What's more, the WWMCCS network perpetuated Nifty Nugget-type mix-ups in synchronizing the simulated availability of airlifters and their loads at US bases.

Withal, the Pentagon considered Proud Spirit a plus, if for no reason other than the practice it provided the players. Shortly after it ended, Defense Secretary Harold Brown reported that "it verified the validity of many of the remedial actions undertaken as a result of Nifty Nugget," and "highlighted some additional areas in which improvements are needed.

"The Joint Deployment Agency's ability to manage deployment planning and execution is an improvement over [that of] our previous, fragmented systems," Brown declared. "Although we have considerable work yet to do—especially in automated support systems—we are headed in the right direction."

Brown appears to have been correct. Reagan Administration officials are enthusiastic about the Joint Deployment System for having "straightened out," says one, "the airlift and sealift coordination problems of Nifty Nugget and Proud Spirit." He adds: "Those kinds of problems are behind us now. We are confident we can manage what we've got. We can maximize our lift assets, our manpower, and our matériel."

The main reason for such mounting confidence is, by all accounts, the gelling of the JDS. But in broader context, the Reagan Administration's attitude and actions clearly have a lot to do with it. The Administration has elevated mobilization to four-star status among national security priorities. As Secretary Weinberger noted in his Fiscal Year 1984 posture statement early this year: "This Administration places great importance on creating a capability to respond, with appropriate military measures, to a set of geographically dispersed, simultaneous emergencies."

Participation by actual forces gave Proud Saber 82 a flesh-and-blood flavor.

Proud Saber

Therein lies the key to Proud Saber 82 and Rex Bravo 82, the military-civilian mobilization exercises conducted in tandem through ten days of November 1982. "Global crisis" was their game. They came off, from all that can be gleaned about them, very well indeed. At a post-exercise briefing, a senior Pentagon official offered the conclusion that "we're in a markedly better position for a major mobilization and deployment of forces." Among other things, Proud Saber showed "very extensive improvements" in rallying Reserve and Guard units, and in the ability of the Pentagon's civilian mobilization hierarchs to "man their battle stations."

DoD and the JCS had invited the services to lend flesh-and-blood flavor to Proud Saber by carrying out, simultaneously, real-life mobilization exercises on their own. All did. The Air Force exercise, called "USAF Special Project—Proud Saber," was devised by the Exercise Branch of the USAF operations directorate under Maj. Gen. Robert D. Beckel at the Pentagon. Its stated purpose was to "examine and evaluate USAF capabilities to conduct combined, simultaneous mobilization/mobility operations during a crisis" and "USAF ability to receive, process, and support Air Reserve units as they reported and were placed on active duty."

It was some workout. It involved people-moving, aircraft-flying, cargo-loading, equipment-repairing, communications, and security operations at air bases from Florida to California and overseas. All told, 882 passengers and thirty-four tons of cargo were airlifted in thirteen MAC missions. Ten MAJCOMs and eight SOAs convened full battle staffs, and got with it at wing and squadron levels. All 452 USAF Reserve and most Air National Guard units had roles. Active, Reserve, and Guard units took part at eighteen CONUS bases, four USAFE bases, and one PACAF base.

Air Force Logistics Command at Wright-Patterson AFB, Ohio, was the cynosure. But a great deal of the action took place or originated at Kelly AFB, Tex., because of its extraordinarily rich combination of MAJCOM, Reserve, and Guard units, including logistics and communications outfits, a MAC Reserve squadron, and a Guard fighter squadron. A Red Horse (Heavy Engineering Unit) construction team was ferried from Kelly to Tyndall AFB, Fla., and then convoyed to Hurlburt Field, Fla., to repair a runway simulating combat damage. Other highlights:

- Ten Combat Logistic Repair Teams, an air-transportable clinic, and a Prime BEEF cargo handling team deployed to Davis-Monthan AFB, Ariz.
- Teams from all Air Logistics Centers repaired six F-101s and eight F-105s that had been shot up,

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James W. Canan has been Defense Correspondent for Business Week *since 1966, and prior to that worked for the Gannett Newspaper chain. Born in New Castle, Pa., he received his A.B. degree from Westminster College, New Wilmington, Pa., and attended the Medill School of Journalism at Northwestern University. Mr. Canan is the author of two books—*The Superwarriors *(published by Weybright and Talley) and* War in Space *(Harper & Row). He will join the staff of* Air Force *Magazine as a Senior Editor this month.*

on the ground, with 23-mm ammo.

- At Robins AFB, Ga., a SAC Aircraft Reconstitution Team loaded eleven tractor trailers with equipment to support B-52 base operations, and went off on a ten-mile convoy.
- A total of 250 Air Training Command Security Police were convoyed from Laughlin AFB, Tex., to Kelly, processed, and redeployed by air.
- The Army at Fort Sill, Okla., convoyed more than 600 troops and fifty tracked vehicles, including 155-mm howitzers and Lance missile launchers, ninety-plus miles to Tinker AFB, Okla., for static loading aboard twenty-seven C-141s and five C-5As. Within thirty-six hours, all the troops and 940 tons of equipment had been stowed aboard. Moreover, elements of a Fort Sill helicopter battalion flew to Tinker and were processed for airlifting.

All the time, the Air Force Manpower and Personnel Center, Accounting and Finance Center, and Reserve Personnel Center were computer-deep into Proud Saber.

Enhancing Industrial Surge

Now the Air Force is laying plans to do in every future JCS mobilization exercise just what it did in correlation with Proud Saber, but with variations. "We look at it," says an Air Force officer involved in exercise planning, "as the JCS throwing a party, and inviting us to come." He adds: "We made our part of Proud Saber as realistic as we possibly could. It really tested our go-to-war capability. We think we did well, and we expect to get even better."

From the Defense Department's standpoint, not all was rosy, however, in Proud Saber. In generalities, Secretary Weinberger acknowledged nagging deficiencies of logistics and equipment stockage. Furthermore, said he, "We will require a much greater effort . . . to enhance our [industrial] surge and conversion capabilities."

On that score, much has been happening. For example, one of the Administration's first moves was to set up the Defense Department Industrial Task Force under Iklé. Working with contractors to transform "surge" from a dirty word to a byword in mobilization, it has come up with a novel "rolling inventory" approach to surge production.

To get around industrial base bottlenecks at subcontractor levels—for such long-lead items as machined metal parts and castings—the task force proposed providing the Pentagon's prime weapon system contractors with additional up-

Nifty Nugget conveyed to OSD and Congress the importance of such programs as the KC-10 procurement.

front funding. They would spend it on components and the subassemblies, in quantities commensurate with predictable wartime production-surge demands on their systems.

It would be a one-time expenditure. The selected prime contractors would buy, all at once, maybe twice as much as they would normally need for a year of peacetime production. Then they would return to normal buys in each of the following years, and roll their reserve inventories ahead each year. If they had not used up their surge backup supplies by the final year of their production runs, they would simply not buy any more for that year's production, and would use up their inventory instead. Meanwhile, the dollar value of the inventoried materials would have appreciated.

The Administration has asked Congress to approve rolling-inventory appropriations for some weapons procurement programs in Fiscal 1984. For the sake of stabilizing the defense industrial base, it is also dual-sourcing major weapon systems wherever possible, and is giving high priority to multiyear contracting, as in the F-16 program.

The Total-Force Look

In several other areas, too, the Administration is extrapolating from lessons learned, and changes made, during the post-Nifty Nugget Carter years. Selective Service registration now is a *fait accompli,* and Congress has given permission to call up 100,000 reservists instead of 50,000 prior to declaration of a national emergency. Accordingly, the Defense Department has honed its Wartime Manpower Planning System (WARMAPS) into a much quicker, more effective instrument.

Out of Proud Spirit came the Emergency Mobilization Preparedness Board. Now under William P. Clark, the President's National Security Advisor, the EMPB has set up twelve mobilization working groups throughout the government. The Defense Department is a member of ten of those groups, and chairs two.

At the Pentagon, there has been a noticeable invigoration of the Mobilization and Deployment Steering Group under Iklé. Composed of high-ranking representatives of OSD, the JCS, and the military departments, this group has been instrumental in the Administration's planning for "conflict on a global scale," as Weinberger described it in his posture statement this year. Such planning is necessary, he claims, because it just might happen—and if it does, the Administration must know, beforehand, what kinds and sizes of forces would be needed to fight it, and "the demands that expanding our force structure would make on the nation's economy and resources."

In keeping with this, says one Defense Department mobilization planner, "We've transitioned into a total-force look. The scope and realism of our exercises will increase. We're much more sophisticated now, and as the mobilization system becomes better under stress, we'll stress it more, in different ways."

Just how far have we come since Nifty Nugget? "If we had to mobilize for war tomorrow, we would have to work hard at it and have some luck," this official says. "But I now believe we could hack it." ■

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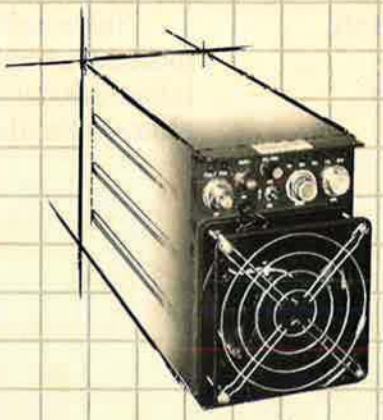

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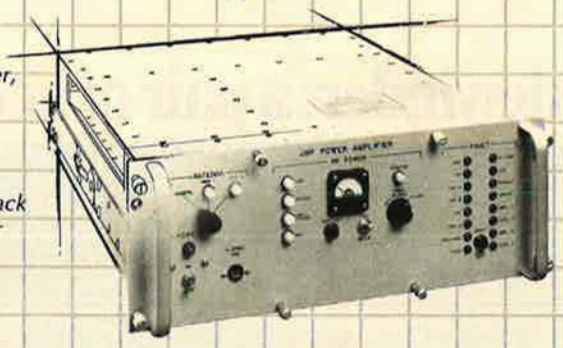

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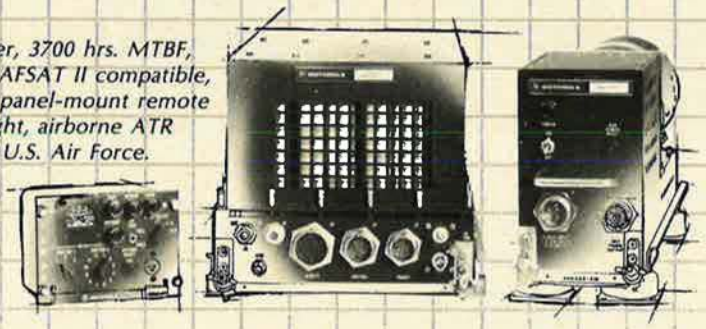

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Moving troops and equipment to the site of confrontation efficiently is the key to combat readiness. How well prepared are US airlift and sealift to move out quickly, and what is being done to further improve these capabilities? That was the topic of discussion at the recent AFA symposium . . .

MOBILITY
KEY TO GLOBAL DETERRENCE

BY EDGAR ULSAMER
SENIOR EDITOR (POLICY & TECHNOLOGY)

IN Fiscal Year 1984, the US will spend about $20 billion—or about seven percent of its total defense budget—to improve the mobility of its military forces, according to Dr. Richard D. DeLauer, the Defense Department's Under Secretary for Research and Engineering. Addressing AFA's national symposium on "Mobility: Key to Global Deterrence"—held in St. Louis, Mo., June 23–24—he explained that these investments are essential because they "make our deterrence credible."

The program's keynoter, Gen. Jerome F. O'Malley, USAF's Vice Chief of Staff, warned that "we, in the United States, are in danger of getting there lastest with the leastest" unless the current condition of "more fight than ferry" is corrected. That is why that "within the Department of Defense, mobility is our second highest priority for nonnuclear forces—right after readiness and sustainability," he said. Stressing that in a practical sense mobility is the key to readiness for most combat forces, he added that "a fighting force isn't ready in South Carolina. It's ready when it arrives at its combat location. Without the needed airlift and other mobility programs, all the spares, training, and equipment in the world won't make a fighting force truly ready."

The Air Force's response to the challenge is to "increase the nation's strategic airlift capability by seventy-five percent over the next ten years [and] to better than double the current capability by the mid-1990s," he told the AFA meeting.

The Defense Department's long-term mobility objective is to be able to meet the demands of a worldwide war, including concurrent reinforcement of Europe, deployments to Southwest Asia and the Pacific, and support for other areas. Over the near term, Dr. DeLauer said, the objective is the ability to reinforce NATO with six Army divisions, a Marine Amphibious Brigade, and sixty tactical fighter squadrons in ten days, or to deploy a joint task force and associated support forces to Southwest Asia within six weeks. Given the Soviets' capability to launch simultaneous attacks in Southwest Asia, NATO, and the Pacific, the Defense Department's long-range goal is to be capable of defending all theaters simultaneously.

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US reinforcement goals for NATO center on augmenting the forward deployed forces in Europe with mobile reserve forces essential to block Warsaw Pact breakthroughs. While sealift is counted on to deliver most of the follow-on forces and supplies, it cannot meet the immediate deployment and supply requirements of the combat forces first on the scene. Airlift could move troops quickly, but the amount of equipment that is needed in the first two weeks of a deployment far exceeds the capacity of the existing airlift fleet. The Pentagon, therefore, came up with a mix of prepositioned equipment, called POMCUS, or prepositioned matériel configured to unit sets, and airlift to meet its rapid reinforcement objectives. This combination of forward deployed forces, POMCUS, and airlift is designed to

meet the critical NATO goal of "ten divisions within ten days."

Prepositioning and Survivability

As General O'Malley told the AFA meeting, "all of the services are working hard on a comprehensive program to preposition needed wartime equipment and supplies in or near potential trouble spots. Every ton we preposition is one less ton we must fly or ship in time of crisis." The Air Force, he explained, is prepositioning squadron-size increments of aircraft support equipment at potential beddown locations in Europe, which saves about twelve C-141 loads per squadron.

In similar fashion, the US Army is moving toward building up enough POMCUS in Europe to equip six Army divisions by the end of the decade. With POMCUS, more than ninety percent of a mechanized or armored division's equipment will be stored in Europe, with the remaining high-value or maintenance-intensive equipment and all the troops stationed in the US.

Lastly, the Navy is contracting for thirteen maritime prepositioned ships that will be stationed in the Indian Ocean to provide logistics support for three Marine Amphibious Brigades. Also, all of the services are negotiating on a country-by-country basis to get permission to preposition additional equipment on land in the Southwest Asia region.

But prepositioning is not without problems. One, as Dr. DeLauer pointed out, is that congressional support for POMCUS is tepid at best. Prepositioned material, he acknowledged, "is not very mobile when it gets there and there are questions about its survivability." General O'Malley added that "prepositioning, while reducing total movements, does not immediately translate into combat power. In fact, it tends to offer an inviting target to potential enemies until linked up with air-delivered forces." As a result, he pointed out, "prepositioning makes little sense unless we have the airlift capability and the national will to make an early commitment to reinforce."

The central requirement, Dr. DeLauer said, is to provide matériel and supplies on a reliable, survivable basis wherever and whenever they may be needed. The safest way of ensuring the survivability of these assets—at least in a conventional context—is to "keep them out of harm's way" by relying on rapid mobility. But there is a Catch-22 quality to such an approach, he suggested, since "it makes a difference whether you are going to Europe under the gun of all those surface-to-surface missiles, or you are going to Southwest Asia, or Southeast Asia, or the Northwest Pacific where you once again would be under the gun of land-based air." As a result, he said, the efficacy of airlift could well be "scenario-dependent."

General O'Malley shared this concern about airlift attrition, saying, "We can't afford to suffer between fifteen and twenty percent attrition of our airlift forces as some think-tank scenario writers have suggested." Lt. Gen. Lawrence A. Skantze, Deputy Chief of Staff for Research, Development and Acquisition, added that "in the future our entire force must be capable of dealing with attempts to disrupt the flow of men and equipment that rapidly mobile forces require."

Terming this the principal challenge in the field of airlift for the years ahead, he cautioned that "we cannot hope to produce a fleet of armed and defended airlifters capable of surviving any onslaught, but we must ensure that our airlift forces can't be held hostage or rendered impotent by a few hand-held missiles or pockets of insurgents operating near our airfields." General O'Malley acknowledged the theoretical feasibility of providing future airlifters with "stealth" features. At the same time he cautioned that at this time "we don't know how to use stealthy machines [as yet]. First, we don't know what they [will] look like in all cases. We don't know how sensitive they will be."

The idea of stealth technology is in hand but the translation of prototype technology into fully operational assets, "be that a bomber, fighter, or airlifter," will take a long time and "we are not there yet." As a result the Air Force is as opposed to "jumping over the C-5B to a stealthy airlifter" as it rejects bypassing the B-1B to go directly to a stealth bomber: "We are first going to buy about 100 B-1Bs and then, if our program holds up, will go into something like 120 ATBs [advanced technology bombers]."

Improving Airlift Reliability

Over the past twelve months Military Airlift Command has brought up its C-5A fleet to a ninety percent reliability, with further improvements expected in the future, its Commander in Chief Gen. James R. Allen told the AFA meeting. He cited three reasons for this improvement. There are more spares because of substantial recent investments in this area. The experience level of MAC's maintenance force has increased because of higher retention levels. Lastly, the fact that the C-5s are being used "in a more demanding" way has boosted the morale of the crews. The C-5A's reliability rating, however, still lags behind that of the C-141s (in excess of ninety-five percent) and of the C-130s (in excess of ninety-seven percent), General Allen said.

But the road toward further boosts in airlift reliability may be a rocky one because of a problem that Maj. Gen. Cornelius Nugteren, Commander of AFLC's Warner Robins Air Logistics Center, defined as "too few airframes, systems that are aging and growing progressively more difficult to maintain, and a spares funding problem that is even more worrisome." AFLC, he explained, is satisfying MAC's aircraft availability requirements by "delaying or accelerating repairs to coincide with programmed depot maintenance and sending out field teams to accomplish modification on station." The bottom line of these improvisations, he suggested, is "hard to ignore—we are robbing Peter to pay Paul; we are flying the peacetime mission at the expense of wartime sustainability."

In the case of the 723 C-130s in USAF's inventory, the problems of an aging aircraft afflicted by "structural problems, particularly with the outer wing," are being compounded by a spares funding level that ranges from slim to nil. General Nugteren told the AFA meeting that "peacetime operating spares for the C-130 have not been fully funded since FY '79, and war readiness spares . . . have varied from full to no funding over the last five years. Other war reserve material has never been funded."

The spares problem is not confined to the C-130s, but

extends across the board, according to General Nugteren: "We are forced to project spares funding three to five years in advance. When the operative year rolls around, an entirely unforeseeable part or subsystem usually malfunctions. If the problem is fleet-wide, our available assets are inadequate. A call to the original contractor—if he is still in business—often shows that he stopped making the item years ago. Since the contractor pool has greatly diminished over the years, we may have to go sole-source. The contractor retools. We lose all economy of scale. And we use critical spares funding to solve a totally unpredictable problem. In the meantime, our shortfall continues to mount."

Because of the requirement to keep the C-130 operational, AFLC will begin to replace the outer wing main structure in all B and E models this fall, a process that is to be completed by 1987, he reported. About 400 aircraft will be rewinged.

"... using services are unanimous in their support for the C-17. The Army field commands recently took a hard look at their airlift requirements and found numerous instances where our current airlift force is inadequate and ground transportation is totally impractical."

In the case of the C-141s, he said, the high reliability rating is "misleading" because about sixty-five percent of the time "we restore the C-141 to mission-capable status by reserve material withdrawals or cannibalization." Little analysis is required to pinpoint the cause of the problem, according to the Warner Robins ALC Commander. Spares funding for the C-141 fleet was about twelve percent of the required total in 1980, 36.5 percent in 1981, almost fifty-eight percent in 1982, and back down to about twenty-five percent in 1983.

Still, AFLC continues to work the structural "hot spots" of the C-141—which on average is seventeen years old and has logged about 24,000 flying hours—with the expectation that the average service life of the aircraft can be stretched to about 45,000 flying hours. As a result, he predicted that "we will have C-130s and C-141s well into the next century, fifty- and sixty-year-old airplanes: unheard of just a short time ago, but, I believe, commonplace for the future."

The benefits of prolonging the life cycle of aging aircraft through modification need to be weighed against "total cost," General Nugteren cautioned. The critical questions that ought to be answered before the decision to modify is made are how much modification will actually cost, how much time it will take, and what its impact on reliability and maintainability will be, according to General Nugteren: "Every hour an aircraft sits in a hangar undergoing modification is an hour it neither contributes to deterrence nor to operational military capability." The C-5A's wing modification program, combined with normal depot maintenance and a commercial radar installation, for instance, drives MAC's operational fleet down to sixty or fewer aircraft out of an inventory of seventy PAA (primary aircraft authorized) units, he explained.

The merger of the Special Operations Forces (SOF) with MAC's Aerospace Rescue and Recovery Service in March 1983, General Allen said, is leading to significant "economies of scale on both sides. With MAC's C-130s backstopping the [AC-130s and MC-130s] of the Special Operations Forces, both branches gain greater mobility." The C-130, he added, continues to do a "magnificent job" for the SOF and lends itself to further internal upgrades. Even though the aircraft is of the same vintage as the B-52D, there is no need to develop a new platform for the SOF mission, according to General Allen.

The C-17 Requirement

Even though the Air Force is prolonging the service life of the C-130s and C-141s, there is a clear-cut requirement for a new and modern airlifter capable of both intertheater and intratheater operation. General O'Malley predicted this aircraft "will be the backbone of our airlift force over the next thirty or forty years." Allegations from outside the military to the contrary, he stressed that "using services are unanimous in their support for the C-17. The Army field commands recently took a hard look at their airlift requirements and found numerous instances where our current airlift force is inadequate and ground transportation is totally impractical."

General Skantze added that the C-17 is central to redressing "our airlift shortfalls, especially in the areas of outsize [cargo] and intratheater airlift. This simple, rugged, reliable airlifter will incorporate low-risk technology to provide long-haul efficiency as well as safe and routine operations into small, austere airfields."

General Allen rejected the notion that the C-5 could do double duty as a strategic and an intratheater airlifter: "It closes down the airports it lands at—such as Bitburg and Zweibrücken [in Germany]—because it can't get off the runway, and until it gets off again the airport is not usable."

The C-17, in contrast, General Skantze pointed out, "will have the capability to carry all types of air cargo over intercontinental distances [in addition to being able] to operate directly into and out of the small, austere airfield environments typical of contingency areas around the world." The proposed new airlifter will cover a range of delivery modes consisting of "airland, airdrop (including outsize), low-altitude parachute extraction (including outsize), and rapid/combat offload," he said.

One of the C-17's undisputed virtues is that it will be able to take the Army's firepower directly to the battlefield without need to dismantle bulky equipment and without the time-consuming transshipment required with presently used aircraft. The versatility of the aircraft is such that it will be able to perform three essential tasks, according to General Skantze. It should help redress the marked shortfall in strategic airlift that will exist even after the Air Force completes acquisition of an additional fifty C-5Bs and forty-four KC-10s that is in progress; it provides the theater commanders with outsize intratheater capability; and it is a candidate for replacing some C-130s and eventually the C-141 force.

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Dr. DeLauer predicted that if the C-17 development program makes it through the current session of Congress, "it probably will make it all the way" into full production. He conceded that he would be "less than candid if I said that everybody in the [Defense Department] is in agreement on what its actual configuration should be and what it should be configured for." The Army, he said, tends to emphasize the intratheater aspect of the C-17 and would like to see the design skewed in that direction.

CRAF Enhancement

The Civil Reserve Air Fleet (CRAF) arrangement, now in its thirty-first year, provides about forty percent of MAC's wartime cargo-delivery potential and virtually all of its passenger-carrying capability. On June 8 of this year, the Air Force released a request for proposal (RFP) to industry for the so-called CRAF Enhancement program. General O'Malley told the meeting that "we look forward to signing contracts in September." He added that this program "has had difficulties over the years with inadequate funding, poor response from industry, and, early on, lack of congressional support. We look forward to success this time, however. We believe the 'up front' money we provide is the right incentive for the airlines to participate in the modification as well as to keep these vital airlift assets within our nation's air carrier family."

Purpose of this program is to modify new or existing wide-body commercial passenger aircraft by adding such features as cargo doors, stronger floors, and cargo roller systems. Aircraft so modified would be used to transport oversize and bulk cargo during emergencies.

Secretary DeLauer cautioned, however, that the commitment to the CRAF enhancement was not "wholehearted," with some Pentagon officials appending the condition: "If the responses appear to be viable, we will proceed" with the program. Saying that the program is "the right thing at the right time," he expressed the hope that, in spite of the many false starts in the past, the CRAF enhancement program will finally get under way.

Command Control and Communications

Military mobility and C^3 (command control and communications) are closely intertwined, in many instances to the point where one can't function without the other. In case of a full deployment of the Rapid Deployment Joint Task Force (RDJTF) to Southwest Asia, the required C^3 equipment would represent about six percent of all the matériel that must be airlifted, Lt. Gen. Robert T. Herres, Director for C^3 Systems, OJCS, told the AFA meeting.

Communications, he said, represents the Achilles' heel in mobility-related C^3 capabilities, especially in terms of jam-resistant UHF (ultrahigh frequency) radio communications for airlift and sealift forces. Satellite communications, he warned, are and will remain vulnerable to jamming: "It is important to occupy the high ground, but we must remember one thing about the high ground—everybody can see you there, you are within a wide footprint of the users and, therefore, subject to jamming." Modernization of UHF communications is essential even though it is technically difficult to provide systems operating in that frequency regime with jam resistance. All services are trying to solve this difficult task, he explained.

The MILSTAR Satellite Communications System, under development by the Air Force for use by the strategic and tactical forces of all services, although "very important" represents no "panacea" in terms of the command and control requirements of the airlift and sealift forces, according to General Herres. Airborne MILSTAR terminals tend to be expensive and "we probably won't ever get enough money to put them on all of our aircraft, especially not airlift" aircraft, he said. The likelihood of equipping airlift aircraft with Joint Tactical Information Distribution System (JTIDS) terminals is also remote, and at best a "long time" away, according to General Herres.

Communications represents the Achilles' heel in mobility-related C^3 capabilities, especially in terms of jam-resistant UHF (ultrahigh frequency) radio communications for airlift and sealift forces.

The mobility of command and control equipment can obviously be increased by reducing its size and weight. "We are trying to make things lighter and get more performance out of a given amount of space and weight." At present it takes about 150 trailer vehicles to meet the communications need of an Army corps. Equipment being developed under the Joint Tactical Communications Program (TRITAC), General Herres said, will fit into ninety trailers and do the same job.

Another area where mobility and command and control requirements converge is the C-17, a "tailor-made" candidate for the WWACPS (World-Wide Airborne Command Post System) mission, according to General Herres. Between forty and fifty aircraft are to make up this fleet to serve either as airborne command posts of the commanders in chief of the unified and specified commands or as communications relay aircraft of the postattack command and control system. EC-135 aircraft serve in the airborne command post role at this time, but lack the survivability of an EC-17, in the view of General Herres: "The C-17 is an ideal aircraft for a significant portion of the [WWACPS] fleet because it can operate off short fields and unprepared strips. The aircraft has a lot of autonomous operational characteristics, and survivability, of course, is the name of the game." In the view of the Joint Staff, it would be far more cost-effective "if we knew in advance what airframe the C^3 equipment [will have to] fit" than to shoe-horn the command and control equipment into the platform after the fact.

The use of remotely piloted vehicles (RPVs) and drones to reconstitute tactical C^3 nets in case of satellite outages is promising but costly. General Herres suggested it probably would be necessary to assign several missions in a flexible fashion to each platform, "perhaps by putting radios on the RPVs with some modulation characteristics to enable terminals that [may be terrestrially based, aboard satellite, or airborne] to talk to

that transponder so that if we lose satellites, we use the RPV as a substitute and still have a robust system."

The Pentagon, General Herres said, is moving toward combining some strategic and tactical command and control functions. Included here is the plan to bring the Joint Strategic Connectivity Staff from Hq. SAC at Offutt AFB, Neb., to the Joint Staff, and to expand its scope to encompass all—including tactical—C^3 functions.

JVX and STOL

The Air Force, General O'Malley told the AFA symposium, will "probably not" stay with the Joint Service Advanced Vertical Lift Aircraft (JVX). Both the Air Force and the US Army favor a combination of helicopters and STOL (short takeoff and landing) aircraft to perform the mission for which the Navy and the Marine Corps want JVX, he explained. "Although JVX bodes well for the future, there are more pressing requirements" from the Air Force's point of view, according to General O'Malley. General Skantze termed the JVX a 1990s requirement, adding that the Air Force's near-term need is the acquisition of a full complement of 243 HH-60D helicopters to meet special operations and combat rescue requirements. Dr. DeLauer, somewhat facetiously, diagnosed the problems of the JVX as stemming from two immutable premises: "Joint programs always have difficulty, and joint programs have difficulty from the outfit that isn't in charge."

"Sealift is the element which will unquestionably be called upon to carry the greatest percentage of the logistical tonnage during any conflict."

The JVX program resulted from the coalescence of three requirements. For one, there is the Marine Corps's need, starting in 1990, to modernize its over-the-beach deployment force operating from helicopter ships and landing craft. The Air Force, he said, has special mission requirements, including air and sea rescue. The Army has its own special mission requirements that included long-range, high-speed, covert operations. The Army and the Marine Corps required about 600 platforms each, and the Air Force sought a somewhat lower total. "So it looked like a reasonable program," Secretary DeLauer suggested.

Once the program got under way with the Navy acting as the lead agency, the Army found that "it couldn't support the requirement," he said. Part of the reason, he suggested, was the fact that the Defense Advanced Research Projects Agency (DARPA) is working on an approach that could meet the Army's special mission requirement concurrent with JVX, "and the Army wanted to run that problem."

The Air Force, he charged, is "still wishy-washy, I [suspect] because they would rather have C-17s and fighters." At this time, the JVX program is being run by the Navy with the help of a joint-service team. The program is in a twenty-three-month risk-reduction phase. If JVX lives up to the original expectations at the end of this phase, "then will be the time to decide how to proceed and who is going to participate," Dr. DeLauer said.

Another mobility requirement that lacks uniform support from the services centers on the development of STOL and V/STOL combat aircraft. Deployment by the Soviets of SS-21 and SS-23 surface-to-surface missiles that carry highly accurate conventional warheads presages a novel and ominous threat to US airfields and aircraft in NATO, he warned. As both the US and the Soviets move toward real-time acquisition of both fixed and moving targets, coupled with the development of standoff weapons with essentially zero-miss distances and near real-time battle management with the help of advanced data processing, it becomes necessary to make "mobility a basis of survivability," he suggested.

For that reason, Secretary DeLauer said, "we are in a dialogue—one-sided so far—with the Air Force, and the German Air Force in particular, about taking the initiative on very short takeoff and landing technologies for the next generation of tactical fighters." He complained that "we are not getting very far. It's very hard to get people, especially white-scarfed tactical fighter pilots, to talk about the performance that represents STOL and V/STOL."

Elements of Sealift

"Sealift is the element which will unquestionably be called upon to carry the greatest percentage of the logistic tonnage during any conflict," Vice Admiral C. A. H. Trost, Director of Navy Program Planning, told the AFA meeting, adding that "this is not to say that sealift is more or less important than other lift elements." Yet both airlift and sealift are vulnerable to "attrition en route to the scene of the conflict, and both depend on a secure haven to permit offload of their cargo at destination," according to Admiral Trost.

Pointing out that of America's forty-two allies forty are located overseas, that the capacity to deliver bulk cargo on a sustained basis by airlift is limited, and that in many instances, "sealift will be needed to deliver the aviation fuel to the far end of the aviation supply line to permit the cargo aircraft to make a round trip," he warned that the challenge facing sealift is "massive."

The principal elements of sealift, he explained, are the government-owned and operated ships of Military Sealift Command (MSC), the ready reserve force of the US merchant fleet, and the privately owned US flagships of the Merchant Marine. The sealift resources of MSC consist of specialized cargo ships and tankers manned by US Civil Service mariners and include roll-on/roll-off (Ro/Ro) and breakbulk cargo ships with hulls strengthened for Antarctic resupply, he said. Eight thirty-three-knot SL-7 container ships which are slated for conversion to a Ro/Ro configuration will be added by MSC in the next three years. Each SL-7, Admiral Trost said, "will carry as much cargo as 150 C-5 aircraft." The eight SL-7s combined "will be able to load or offload in one day the majority of the unit equipment—tanks, artillery, wheeled vehicles, helicopters—needed for two heavy mechanized or armored Army divisions. They will be able to deliver these cargoes to Europe from the East Coast of the United States in four days and to the Indian

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Ocean from the West Coast in eleven days," according to Admiral Trost.

The Ready Reserve Force consists of twenty-nine vessels—all of which are partially manned and considered capable of putting to sea within five or ten days—and is to be expanded to seventy-seven ships, including sixteen tankers, he explained. These ships, although relatively new, "lack the modern cargo-handling equipment, automation, or engineering plants to be commercially competitive," according to Admiral Trost.

The privately owned US flag fleet includes 104 break-bulk, ninety-seven container, eighteen Ro/Ro, and twenty-one barge carrier ships that can be employed for sealift, he said. In order to reduce response time, the Navy has embarked on a scheme of prepositioning dedicated merchant ships loaded with ground and Air Force support matériel and combat consumables at sea near potential trouble spots. He explained that as many as fifteen merchant ships configured for Ro/Ro operation and manned by civilian seamen will be chartered by the Navy for this purpose. When prepositioned around the world, Admiral Trost explained, they can be loaded with enough cargo for three brigade-sized Marine air-ground task forces consisting of 46,000 Marines.

In an interim program, known as the near-term prepositioning force, the Navy has chartered eighteen merchant ships manned by civilian crews. Seventeen of these ships, he told the AFA meeting, are located in the Indian Ocean near Diego Garcia, and one is in the Mediterranean loaded with Air Force munitions. These ships contain enough equipment for a brigade-sized force of 11,400 Marines and some sustaining support for selected Air Force and Army units of the RDJTF.

Lastly, he said, the Navy plans to convert two Ro/Ro ships to give them the capability to on-load and operate maintenance vans which would be deployed to forward sites when required to support the air elements of a Marine Corps air-ground task force.

Augmenting Sealift

US-owned ships of foreign registry and the dry cargo fleets of allied countries represent additional potential sources of vessels for contingency deployment of US forces. Neither of these sources, he stressed, however, can be considered as freely available. In the case of the former category, the countries of registry can veto their use if that does not coincide with their national interests. So far as allied cargo ships are concerned, he said, "our allies cannot with assurance be relied upon for sealift support, both for political reasons and for their understandable reluctance to risk entry in a conflict in which they are not directly involved. Recent history has demonstrated that our allies—both European and Asian—will not support a solely US effort."

One of the grimmest contingency aspects of US sealift, Admiral Trost stressed, is the state of the US Merchant Marine, "a national asset that has declined markedly. There can be no question that our Merchant Marine must not be further reduced in size, or adequate sealift will not be available for future requirements. In 1950, just over thirty years ago, the US Merchant Marine was the largest in the world and carried forty-two percent of our foreign trade. Today it ranks eighth in size and carries less than four percent." The Defense Department, he added, "has come to realize [that] we cannot allow further decline and still expect to deploy forces using sealift."

For the first time in peacetime, he explained, "We are producing ships to fulfill wartime contingency requirements. We also are continuing to do all we can to help strengthen the American Merchant Marine. First, [there] is our 'Build-and-Charter Program.' Under this arrangement, the ships we need are built and owned by private interests. The Navy specifies the type of ships—those not available in the Merchant Marine—and private investors arrange for construction on the basis of the Navy's commitment to charter the ships. Once the ships are operating, the Navy pays the cost of the service provided at a negotiated charter rate. The rate covers cost of construction and financing, plus a reasonable profit for the owners." To date the Navy has acquired long-term use of twenty-nine ships under the Build-and-Charter Program. More are to follow, Admiral Trost said.

"There can be no question that our Merchant Marine must not be further reduced in size, or adequate sealift will not be available for future requirements."

Another program, known as Convert-and-Charter, is an extension of the Navy's prepositioning effort and will help avoid the "staggering logistics problems brought on by rapidly deploying combat forces far from home in areas where host nation support does not exist," according to Admiral Trost.

The US armed forces, especially the Navy, he told the AFA symposium, need to plan their capabilities with these key factors in mind:

- "The United States is a global power, with global responsibilities, in a world faced with real threats to its political and economic stability.
- "Our national security, and that of our friends and allies, demands flexible, mobile military power.
- "In the past few decades, our country has been able to rely on large reserve capabilities and time to mobilize its industrial capacity to meet a national crisis. We no longer have that base, nor do modern conditions grant us the luxury of time. In the era of 'rapid deployment' and possible 'short wars,' we may well be required to fight with what's on hand. We have long since passed the point where we can delay until our industrial capacity catches up and builds the necessary assets to win—as we have so often in our history. Strategic mobility—and sealift, its principal beast of burden—will have to be a mainstay of our overall force capability—and a much more significant element than it has been in the past."

Admiral Trost's closing thought encapsulated the central message of AFA's symposium "Mobility: Key to Global Deterrence." The history of warfare has shown, he said, "that the nation which can most rapidly generate its military power, bring it to bear effectively, and then fully sustain it stands the best chance of winning. We in the US military plan to win." ■

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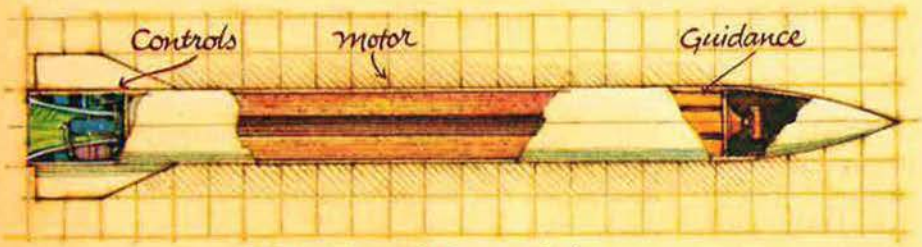

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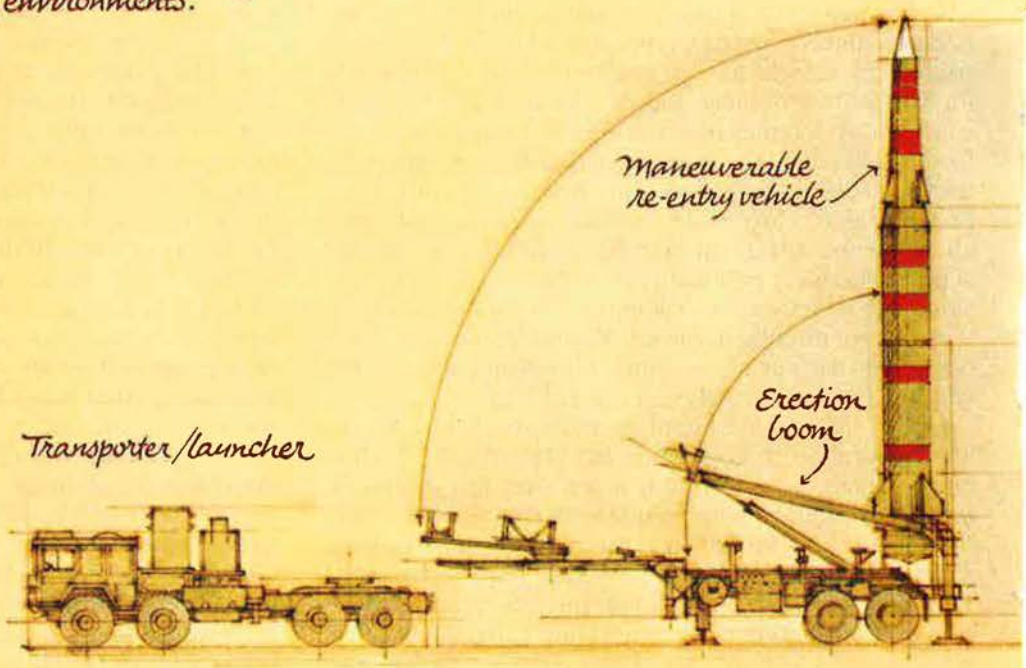

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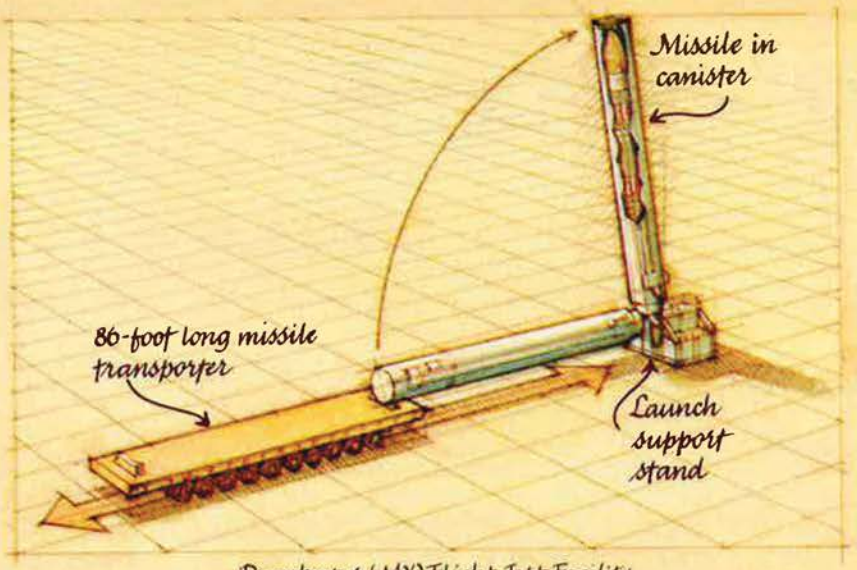

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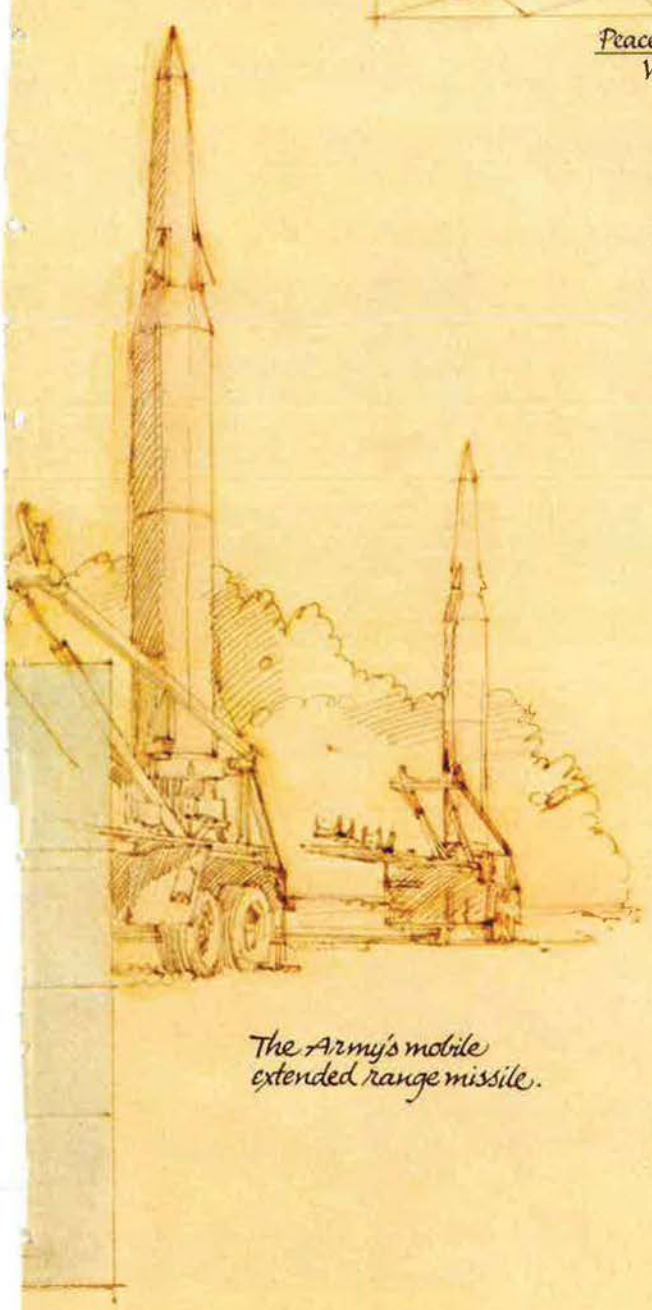

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Low-level flying at night may not be everyone's idea of a good time, but for the usually conservative airlift crews of the 437th Military Airlift Wing, it sure is. That might explain their unofficial motto . . .

'I Love the Nightlife'

BY HUGH WINKLER, ASSISTANT MANAGING EDITOR

THE camouflaged C-141B StarLifter rose just over the ridge and dropped back down into the shallow valley. Flying 300 feet above ground level (AGL) and at a speed of 270 knots, the big airlifter shuddered in the turbulent air above the Tennessee mountains.

Maj. Gary E. Vice, Assistant Chief of the Special Operations Division for the 437th Military Airlift Wing, clutched a large, unwieldy map that had been taped and assembled from several smaller maps. He studied the map and then pointed out the left window of the cockpit.

"See that highway coming up there?" he asked. "We'll want to cross that at a right angle. That'll minimize exposure and the possibility of our being detected by anyone on the road. We'll be over them before they know it.

"Of course," he continued with a grin, "at night they'd have trouble seeing us even if they knew we were coming."

Special Operations Low Level

To most people, the C-141B means strategic airlift—flying high over long, overwater distances on the vital but often routine business of moving the people and supplies that animate the day-to-day Air Force. The people of the 437th Military Airlift Wing at Charleston AFB, S. C., know and fly the StarLifter as a strategic transport, but they are also privy to a more daring side of the C-141B's capabilities. Those capabilities are revealed when the wing flies its C-141B aircraft on a mission known as Special Operations Low Level, or SOLL.

"The C-141 has always had the capability for low-level flight," said Lt. Col. James C. Schaffer, Chief of the wing's Special Ops Division. "However, that was sort of forgotten over the years. With the recent stretch and refueling mods, plus the general need for better force-projection capabilities, people began to take a second look at the StarLifter."

The 437th has been flying SOLL missions for only a few years. At first, Military Airlift Command (MAC) intended to have SOLL-capable units on both coasts—the 437th MAW at Charleston AFB, and the 63d MAW at Norton AFB in California. It was decided, however, to consolidate C-141 special operations under Twenty-first Air Force with the 437th at Charleston AFB. The consolidation from Norton to Charleston was scheduled to have been completed in August.

"This reorganization ties in with the general reorganization of special operations forces and the creation of Twenty-third Air Force," said Colonel Schaffer *(see "Aerospace World," March '83 issue)*. "When we started up here at Charleston, we had a lot of input from the special ops people at Hurlburt Field. Now we're pretty much on our own, though we perform a complementary mission."

Despite SOLL, the 437th MAW is not that much different from any other airlift unit in MAC. With its integrated Reserve Associate unit, the 315th Military Airlift Wing, the 437th flies strategic airlift in support of Air Force bases in Europe and US embassies in South America, Africa, and the Mideast. This primary mission comprises some sixty percent of the wing's flying operations. The wing is also tasked to support West Berlin in a contingency and, recently, has flown in support of US forces stationed in the Indian Ocean area.

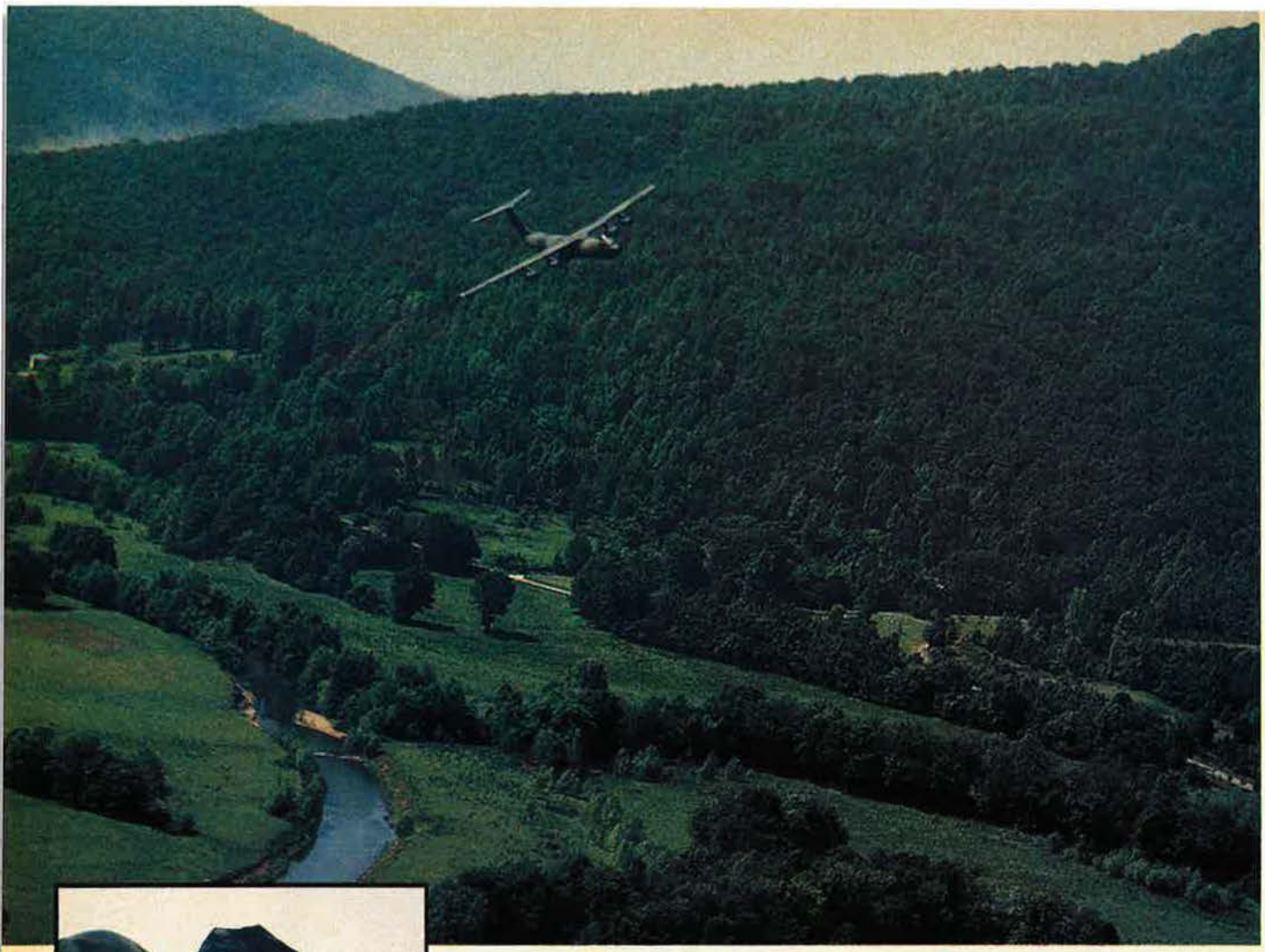
ABOVE: Maintenance team chief MSgt. Billy J. Crocker discusses aircraft readiness with Lt. Col. James C. Schaffer. RIGHT: A C-141B on a SOLL I training flight. BELOW RIGHT: Loadmasters prepare for a CDS airdrop by hooking the guillotine that will cut the restraining strap on the pallet and allow it to fall out the rear of the aircraft. (Photos by William A. Ford, Art Director)

The last few years have seen the wing moving more and more into performing low-level airdrops and working more closely with the Army. Exercises in which the wing has participated include Bright Star, Gallant Eagle, and Reforger.

A Unique Mission

It's the SOLL mission, however, that makes the 437th unique. "It's not your normal airlift mission," admitted Colonel Schaffer.

The SOLL mission is flown in support of unconventional warfare



ABOVE: Flying down in the weeds, C-141 style. LEFT: F Trooper SSgt. Michael Bishop checks engine oil levels before flight. (Photos by William A. Ford, Art Director)

forces, and is usually covert. The SOLL aircrews airland or airdrop supplies, Special Forces units, or other clandestine forces as dictated by the contingency. SOLL crews can also accomplish aeromedical evacuation and search and rescue, but their primary task is to insert troops and supplies into a nonpermissive environment without being detected. There are presently nine SOLL aircrews with the 437th.

There are actually two types of SOLL missions—SOLL I and SOLL II. The difference between them is literally the difference between night and day. The scene described at the beginning of this article took place during a SOLL I mission. SOLL I—the daytime SOLL—is basically a building block toward SOLL II.

During a SOLL I flight, the aircrew uses terrain-masking procedures—contour flying at altitudes of about 300 feet above the ground—to avoid detection by radar. Route planning is extremely important in a SOLL mission, and much time is devoted to ensuring that the penetration route avoids enemy defenses and areas where the aircraft might be detected from the ground. Thus, an ideal SOLL route would be over rugged, unpopulated terrain.

The low-level portion of a SOLL mission is normally flown at about 250–270 knots. However, because of the need to meet the tight time constraints necessary for SOLL, the aircrew can go faster or slower as dictated by the particular situation.

A SOLL I flight terminates, in most cases, with a low-altitude container delivery system (CDS) airdrop. The CDS is a pallet loaded with supplies that weighs between 750 and 1,200 pounds. For training purposes, the "supplies" are four barrels filled with pea-size gravel. Up to thirteen CDS pallets can be airdropped from a C-141B.

The airdrop is made after a "compressed slowdown." Essentially, this means that the aircraft slows down for as little time as possible to make the drop. After the CDS airdrop, the aircrew performs a high-speed egress before recovering to altitude above "friendly" territory.

This is all just preparation for SOLL II. "If we got a real-world mission, we'd prefer to fly it at night," Colonel Schaffer stressed.

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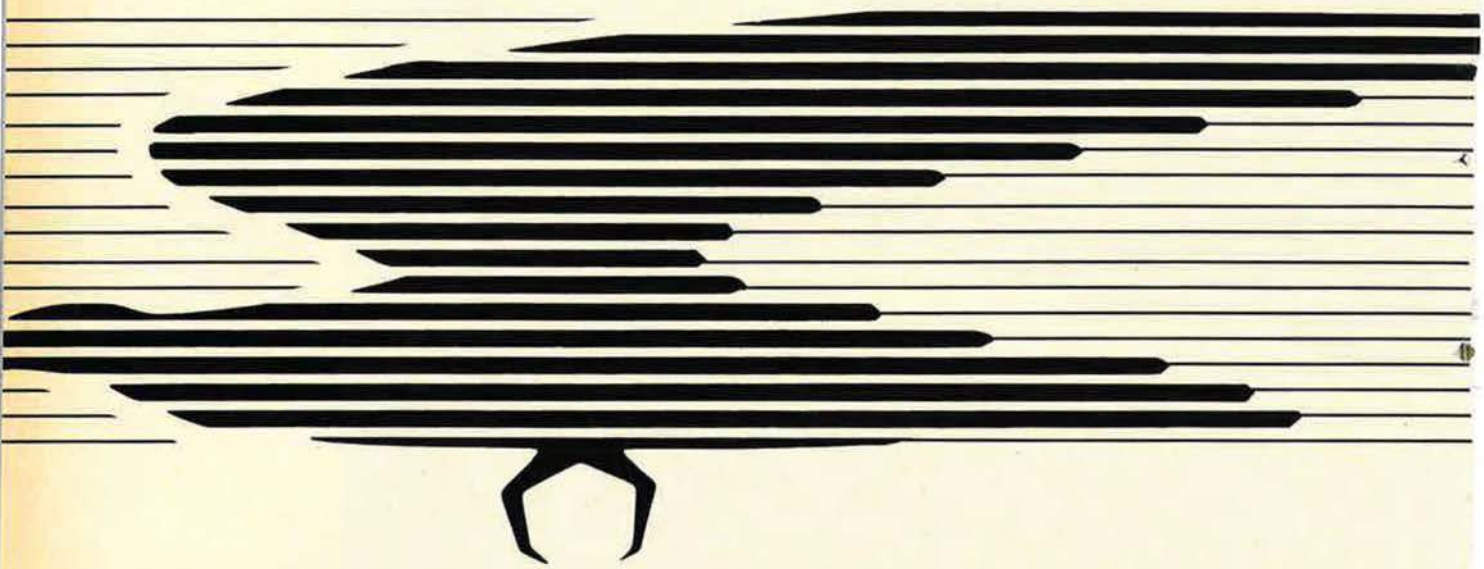

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The C-141B is not equipped with any low-level flight equipment, such as terrain-following radar. Instead, SOLL II is accomplished on *visual flight rules only.* To accomplish this at night, the aircrew flies the mission wearing night vision goggles (NVGs), devices that amplify the smallest amounts of light. (The only allowance for SOLL II is that it is flown no lower than 500 feet above any obstacles along each route leg.)

"SOLL II is flown under complete blackout conditions," explained Colonel Schaffer. "We'd go to blackout about six minutes after we're airborne. Not only are all external aircraft lights turned off or masked, but *all* cockpit lights are also turned off or taped over. Should a warning light come on in the cockpit while I'm using the NVGs, I'd be blinded." The pilots separate themselves from the rest of the flight crew by using a blackout curtain that shields them from light from the flight engineer's and navigator's instrument panels.

(A modification to the C-141B that is being considered for the SOLL mission is installation of electroluminescent [EL] light panels. These panels provide just enough light for the aircrews to see to do their jobs, but not enough to blind the pilots wearing the NVGs. The 437th has one aircraft—60131—that has been so modified.

("There have been a couple of problems with the EL panels," said Lt. Col. John T. Winston, wing Assistant Deputy Commander for Maintenance. "Those are now being worked at the Airlift Center at Pope AFB, N. C." More C-141s may receive the EL lights when the problems are resolved and when funds are made available.)

ABOVE: The view from the cockpit of a C-130 on a SOLL II approach. RIGHT: Combat Control Team members A1C Vann Jones (front) and A1C John Lynch set up the TACAN during a night training mission. BELOW: Airman Lynch adjusts one of the battery-powered IR landing lights while wearing night vision goggles. (USAF photos by TSgt. Ken Hammond)

Planning Is Paramount

Whereas SOLL I flights usually involve only airdrops, a SOLL II mission calls for a blackout landing at an austere landing zone.

SOLL II missions would be accomplished under what is called the Commander of Airlift Forces, or COMALF, concept of operations. The COMALF provides dedicated planning and control of MAC assets during joint operations, and would deploy to a forward staging base with the SOLL forces.

Under this concept, the supported CINC or Joint Task Force notifies Hq. MAC of its mission requirement. MAC, with appropriate input, as needed, from Twenty-third Air Force, notifies Twenty-first Air Force, which establishes the COMALF who tasks the appropriate unit for the mission—in this case, the 437th MAW. The 437th special operations planners work through the COMALF with the JTF planners and the users. "Planning and coordination with the users is of prime importance in SOLL missions," said Col. John J. Vilensons, Assistant Deputy Commander of Special Operations for the 437th. "It can't be stressed too strongly."

Once the mission is defined, the 437th SOLL people begin planning their route and coordinating the flight with the users. SOLL aircrews must also work closely with the Combat Control Team, or CCT.

The Combat Control Team

The CCT performs a job that is integral and vital to the SOLL mission. "We go in first and set up the landing zone," said CCT member TSgt. John E. Lebold. "We are usually airdropped by the C-141, but we can go in overland or by any of several other ways. Our job is to secure the landing field and to set up the TACAN [tactical air navigation device] and the IR lights for the landing."

The CCT consists usually of twenty-four men (no women are assigned to CCTs) who are trained in high-altitude low-opening (HALO) and high-altitude high-opening (HAHO) paradrop and underwater (SCUBA) and amphibious penetration techniques. Team members undergo air traffic control training at Keesler AFB, Miss., and attend jump school at Fort Benning, Ga. They also receive survival training at Fairchild AFB in Washington state. "Our final combat control team training takes place at Pope AFB, and from there we are assigned to an operational CCT," said Sergeant Lebold.

On a SOLL II mission, the CCT would probably consist of a smaller group of specially selected people. "We want to get in and out fast, and we don't need a lot of people or equipment to slow us down," Sergeant Lebold explained. The C-141 would come in low over the landing zone and the CCT and the TACAN and any other necessary equipment would be airdropped onto the runway.

Once down, the CCT would survey the area (CCT members carry paratrooper-model M-16s) or contact the users on the ground, all the while keeping communications to a bare minimum. They would then deploy the TACAN and set up the infrared (IR) light box.

The IR box consists of four battery-powered lights, the first two being set up 500 feet from the approach end of the usable runway and seventy-five feet from the runway centerline. The other two IR lights are set up in the same relative positions 1,000 feet further down the runway, forming a 150-foot by 1,000-foot "box." An IR strobe light is also placed on the centerline at the far end of the usable runway. "All this is done while wearing the NVGs," Sergeant Lebold said.

For a general-case scenario, the CCT is dropped onto the landing zone by the SOLL aircraft. The C-141 would then come around for a landing, using the IR lights for guidance. "If we had to infiltrate the landing zone separately, you can imagine how important close coordination and timing between the aircraft and the CCT would be. For instance, we'll usually turn on the TACAN and IR lights for only four minutes—two minutes before and after the scheduled rendezvous. If the aircraft misses its TOA [time of arrival], then the mission would probably be aborted," explained Sergeant Lebold.

If the SOLL aircraft has made a successful low-level penetration, and if the CCT has been able to set up the landing zone, then the C-141 would come in for a landing. "My goal is to get down, get unloaded, and get out," said Colonel Schaffer.

Once the cargo is unloaded, the C-141 would get airborne as soon as possible—still under blackout conditions. The CCT would either return aboard the C-141, or evacuate the landing zone by some other way. The aircraft would then make a high-speed egress, using terrain-masking and a different route until back over "friendly" territory.

The 437th's crews practice SOLL missions in numerous exercises. In addition to their unilateral training in Red Flag, Maple Flag, and Thunder Goose exercises, the wing flies special operations missions with the Army in the Casino Flight and Orbital Viking exercises.

High Standards

Though any C-141B aircraft in the fleet can fly a SOLL mission, that is certainly not true of all C-141 crews. For instance, a normal C-141 crew consists of five members. A SOLL crew requires nine members. The five primary members of the crew must be instructors, and must fly as an integral crew—that is, they must fly together and cannot be split up.

"Quality control for crews is high," said Colonel Vilensons. "Crew member standards and the integral crew requirement have caused some personnel problems that we've had to work around."

Pilots, for instance, in addition to the instructor requirement, must be airdrop and air-refueling qualified, and must also be SOLL I qualified. "And we also have to maintain our thirty-day currency and strange-route requirements," pointed out Colonel Schaffer.

SOLL crews fly more airdrops but fewer strategic airlift missions than do regular crews. "SOLL is what we call 'flagpole flying,' meaning that we don't often get too far from base," explained Colonel Schaffer. "However, we try to compensate SOLL aircrews with 'plum' overwater flights."

MAC recognized the particular difficulties facing the wing in establishing the SOLL crews, and responded by sending qualified people from staff jobs to the wing. It takes at least forty-three months to bring a UPT graduate to SOLL left-seat pilot status. "MAC lets us hold onto our people—'freeze' them in position—a little longer than usual," Colonel Schaffer noted.

All SOLL crew members are volunteers. "I think that morale is higher among SOLL crews because they are volunteers, and because mission satisfaction is high," said Colonel Schaffer.

The SOLL Aircrew

Three pilots are needed on a SOLL flight: the aircraft commander (left seat), who does the takeoffs and landings; the pilot (right seat), who does the en route and egress flying; and the safety (jump seat) pilot, who backs up the other two pilots.

"As left-seat pilot, I keep my NVGs focused outside the cockpit during the low-level route. Only when we're close to the landing zone will I take control of the aircraft to make a landing. The right-seat pilot actually flies the plane during the low-level, but his NVGs are focused *inside* the cockpit on the instruments," Colonel Schaffer explained.

The jump-seat pilot acts as a backup to the other two pilots. He is constantly refocusing his NVGs from outside the cockpit to inside and back, double-checking the actions of the two front-seat pilots. He assists the front-seaters by working switches, adjusting radio frequencies, and so forth. "His job is to 'distrust' the other pilots," Colonel Schaffer added.

There are two navigators on a SOLL flight. The radar navigator, who sits at the navigator's panel, plots the legs of the route and updates the inertial navigation system as necessary. He has the crucial job of seeing that the aircraft meets its time hacks. The map navigator has a large, detailed map of the route, and assists the pilots in navigating the visually flown, low-level route. He sits in front of the blackout curtain with the pilots.

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There are also two flight engineers—a "panel" engineer and a "scanner." The panel engineer sits in the cockpit and monitors the aircraft's performance. The scanner roams about the aircraft to check system performance, but can switch places with the panel engineer if necessary. Both engineers are needed to preflight a C-141 for a SOLL flight. The scanner will also assist the loadmasters during an offload.

Depending on the mission, a SOLL crew can have two or three loadmasters. Speed in offloading the aircraft is of paramount importance to the loadmasters. "We can offload a full plane in about two minutes," according to SOLL primary loadmaster CMSgt. William J. Sullivan. "We're in early in the planning process for a mission, and we work closely with the users to ensure that their goods are delivered," he continued.

The SOLL crews say that they don't miss much from normal strategic airlift operations. "On a long overwater flight, there's not nearly as much challenge for the loadmasters," said Chief Sullivan. "This is a lot more exciting, even though we don't get to travel as much as the regular crews."

With the higher proficiency requirements and tougher mission, it's not unreasonable to characterize SOLL crew members as an elite group among airlift crews. Are there plans to create a SOLL organization?

"There was some talk of it, but I don't think we'll see that," offered Colonel Schaffer. At present, SOLL crew members are drawn evenly from crews of the squadrons—the 20th, 41st, and 76th—making up the wing. Crew members detailed to SOLL return to their normal squadron responsibilities after accomplishment of SOLL duties. The squadron commanders and ops officers are responsible for setting up SOLL crews, though Colonel Schaffer and wing standardization pilot Lt. Col. Richard W. Lonneman can recommend people for SOLL.

The closest thing to an integral SOLL organization is the SOLL planning staff. But the planners don't spend all their time in an office—"All the people on my planning staff are also primary crew members," pointed out Colonel Schaffer.

"I think it's fair to say that mission satisfaction is higher for SOLL crews than for regular -141 crews," Colonel Schaffer said with a smile.

"F Troop"

The different status of the SOLL crews is mirrored by the maintenance support, too.

"It's true," concurred Lt. Col. John T. Winston, wing Assistant Deputy Commander of Maintenance. "Our two SOLL maintenance teams are unique to strategic airlift."

The wing's three maintenance squadrons—organizational, which provides general and flight-line maintenance; field, which performs heavy maintenance (replacing engines, etc.); and avionics, which is responsible for the C-141's black boxes—contribute people to form the two SOLL-dedicated maintenance teams in much the same way that the flying squadrons contribute aircrew for SOLL. Also like the aircrews, the SOLL maintenance people are all volunteers. "They're a young but very professional bunch," said MSgt. Billy J. Crocker, one of the team chiefs.

The SOLL maintenance group is made up of twenty-six people, comprising the team chiefs, twelve primary members, and twelve alternates. The primary and alternate team member structure does not follow a building-block approach. "I don't subscribe to the theory of the indispensable man," said Colonel Winston. All team members are cross-trained and can assist one another across specialties. When not on a SOLL mission, the maintenance people return to their regular squadrons and normal duties.

"The SOLL maintenance teams evolved after the SOLL crews started flying," explained Colonel Winston. "We kept getting so many requests for dedicated maintenance support of SOLL missions that the team concept started to make a lot of sense." The SOLL aircrews and maintenance teams now work so closely together that the maintenance teams are expected to deploy with the SOLL aircrews on a mission or an exercise. "That's why they wear the camouflage fatigues. They've even received M-16 training," noted Colonel Winston. The availability of the two maintenance team chiefs is always known by Colonel Vilensons, the Assistant Deputy Commander for wing special ops.

The teams' *esprit* shows on the flight line. "We came up with the name 'F Troop,' and that's what everyone calls us now. We're not a bunch of bumblers, though," said Sergeant Crocker with a smile.

F Troop has worked up a special operations mission support kit for SOLL. "The C-141 can still accomplish a mission with a lot of things not working. But some things need to be fixed on the spot in order to make a mission. So F Troop put together a small kit of spare parts and tools to make those fixes. That's the rationale for the support kit," explained Colonel Winston.

"But there have been no special mods to the planes for SOLL," said Colonel Winston, "and maintenance requirements are the same for all the planes. The C-141 is being beefed up a little during depot maintenance, but that has to do with wear, not SOLL. Of course, I'm sure the aircrews would want to fly a camouflaged instead of a gray-and-white bird on a SOLL." (The repainting of the C-141 fleet to European I camouflage scheme is being accomplished during scheduled depot maintenance, and is expected to be completed by 1986.)

"F Troop has motivated all the maintenance people," continued Colonel Winston. "They've improved maintenance throughout the wing, and that's a real good thing as these aircraft move through middle age."

It's clear that the SOLL aircrews think highly of F Troop. "We've got the best maintenance support in the Air Force," said Colonel Schaffer with a tone of finality.

That's a theme that one hears sounded often around Charleston AFB—how the SOLL mission has motivated people throughout the wing. "The enthusiasm and dedication of the SOLL people has spread through the entire wing and has enhanced the professionalism of the whole organization," commented Colonel Schaffer.

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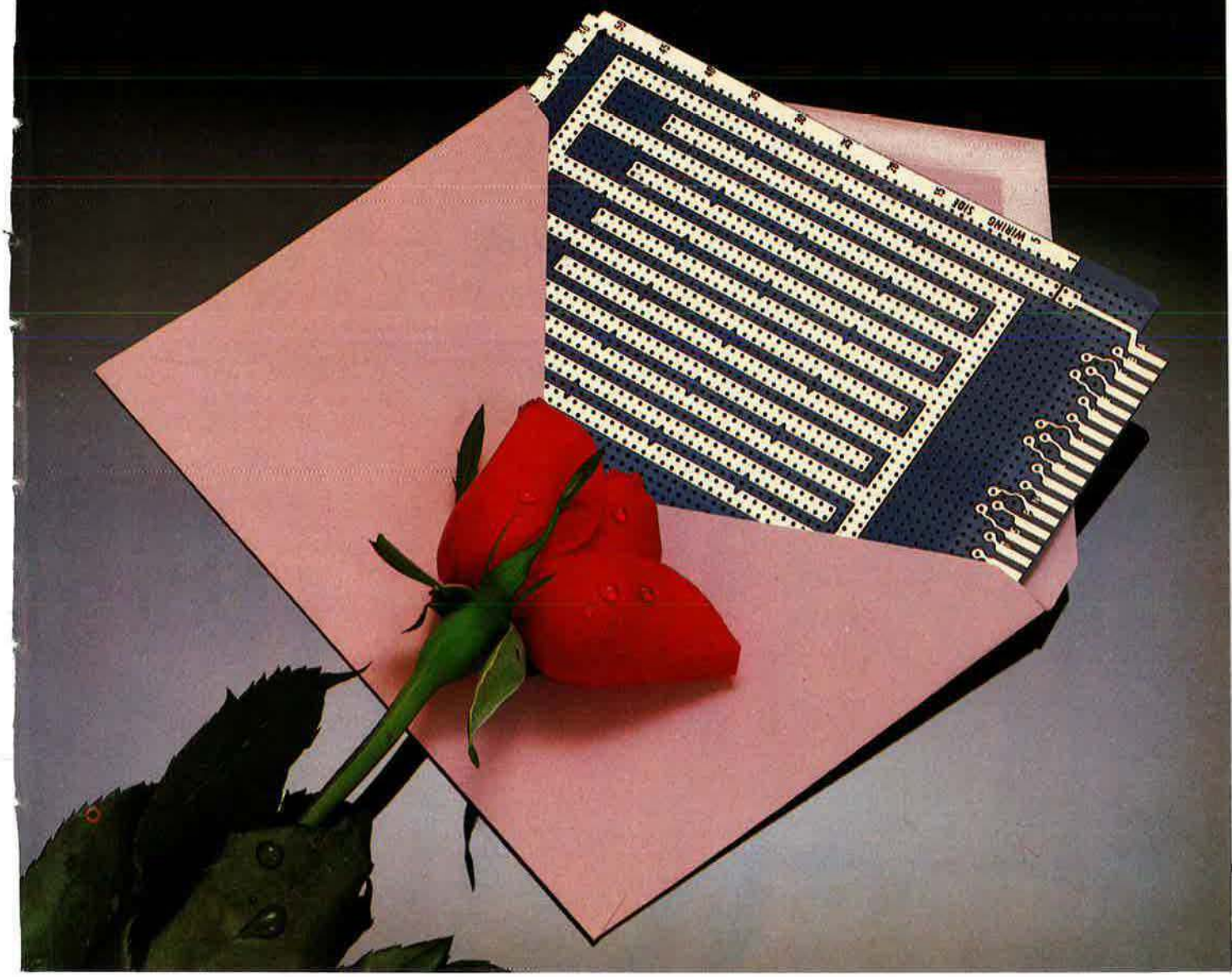

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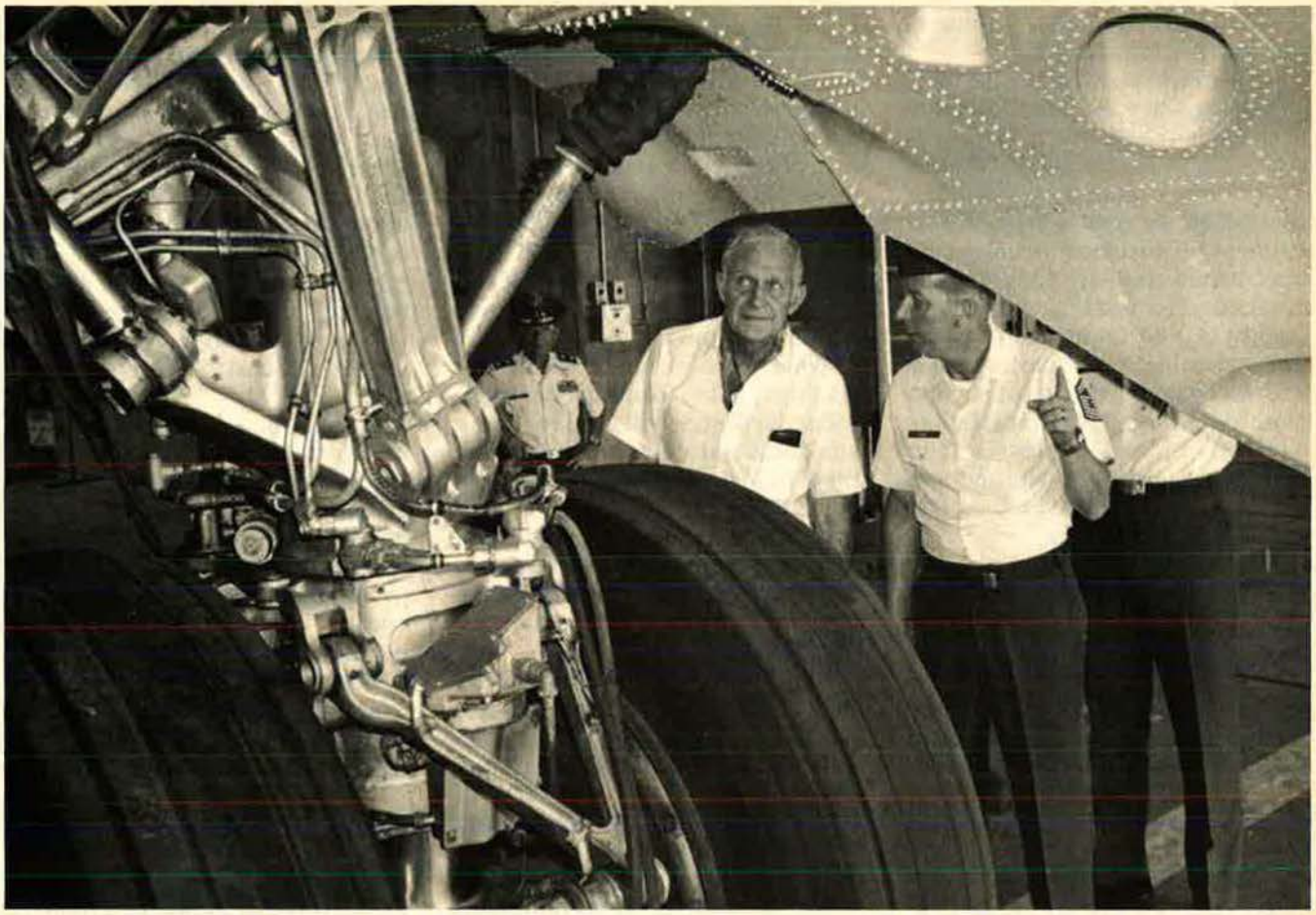

On Alert for Overpricing

BY THE HON. VERNE ORR, SECRETARY OF THE AIR FORCE

From spare parts to sole source contracts, the Air Force is getting tough where tax money is concerned.

THE media in recent months have been alive with tales of overpriced spares, extravagant cost of navigator's stool caps, and excessive executive compensation. In most cases, the underlying problem indeed exists. What is not apparent, however, is that in most of those cases the people who discovered the problems, who brought them to someone's attention, were Air Force people. We are in fact doing a great deal to ferret out practices that keep us from operating at top form.

We are concerned about how we spend our money because we recognize a basic truth about government dealings with business. Alexandre Dumas said it well: "Business? It's quite simple. It's other people's money." The Air Force and our contractors must both always remember that other people's money—tax money—is being spent. In recent years, we have determined to make those "business" dealings more efficient—for us as well as for business. Those efforts are bearing fruit in two ways: We are uncovering practices that don't measure up to standards of good business, and we are working in virtually all areas to ensure we are operating the Air Force with a sound business approach. Moreover, by fine-tuning our business methods, we not only save money, but in many cases we can improve readiness—we can apply that money to other needs, and we get our systems and parts faster.

Recognizing that operating the Air Force in the world business community requires us to use good business techniques, we are devoting increased management attention toward improving how we use those techniques. We have, as a result, been examining and questioning the two main areas of our business approach: what we pay for our systems and parts and how we go about buying them.

What We Pay

How industry prices its products and services is as important to the Air Force (who buys them) as it is to industry (for which it can represent its measure of profit). We have long recognized that pricing is an important element in our business relationship with industry and have always regarded it with scrutiny.

Secretary Orr likes to get out in the field and see things for himself. In the photo above, he's inspecting the landing gear of a B-52D at Andersen AFB, Guam, during a two-day stopover in June '82.

Currently, we are concentrating in five key pricing areas.

• **Should Cost:** One of the most promising ways we have to assure reasonable prices in our large programs is a technique called "Should Cost." When we want to evaluate a contractor, we send a team of government procurement people, contract administrators, auditors, and engineers to analyze cost thoroughly at that contractor's plant. That team looks for uneconomical and inefficient ways a particular plant operates, develops efficient alternative plans, expresses their findings in terms of cost, and sets realistic price objectives for us to use when we negotiate.

An example of how it works: We sent a highly skilled government Should Cost review team to examine the contractor who manufactures a gun pod that we use on the F-4, A-7, and F-16. The team spent several months examining the plant and negotiated a price that netted us $22 million in savings—twenty-seven percent of what we would have paid!

• **Management /Production Capability:** Here we monitor major contracts already in force through a Management/Production Capability Review done by AFSC and performed at a major contractor's plant. In a recent case, we found that the actual performance indices, or determinants of time required to make, assemble, and test modern missiles, greatly exceeded the standard indices on which the cost estimates were based. For an established production line where hard data was available, the assembly phase required fifty percent more actual labor than standard, and the test phase more than 100 percent more. For a new missile in Full-Scale Engineering Development, the assembly phase required more than *five times* the planned labor, and the test phase nearly *nine times* higher than the target.

What have we done with these findings? The Contract Management Division will review these standards and alert our people at the plant to identify problems and help solve them. In this case, the contractor has outlined proposed fixes, including better use of automation, improved quality assurance, motivational programs, and better supervisor training.

• **TECHMOD:** Another way we make sure our contractors are working at their peak is a program called TECHMOD (Technology Modernization), an outgrowth of our MANTECH (Manufacturing Technology) program. With TECHMOD, we pay the contractor to develop manufacturing technologies and he invests in capitalizing these technologies and other modernization we identify in the negotiated TECHMOD strategic plan. With the F-16, for example, we invested $25 million, General Dynamics invested $103 million, and we ended up saving $220 million. The Air Force now has twelve such TECHMOD efforts.

• **Spares:** But buying the initial piece of equipment at the proper price is only one part of the problem. Another area we need to work hard on is the cost of spare parts. When personnel at the Oklahoma City Air Logistics Center pointed out to the contractor that the FY '82 repricing increases for certain parts totaled some $140 million, the explanation in most cases was that the part's original price was "not representative of cost." Today we want to know why!

To help in our assessments, we have developed a program called PACER PRICE, which brings together a team of engineers, manufacturing estimators, price analysts, small-business people, and a person called the "competition advocate." We are trying this at one of our logistics centers to see how well it works. This team sits down and examines items bought each year for the Air Force. The team has only had a chance to review a handful of items so far, but they found far too many were priced significantly higher than the team's price. The PACER PRICE team also recommended these items for competition.

Zero Overpricing, a program we've had around for several years, has just begun to receive added attention. Zero Overpricing simply recognizes that looking at and touching a spare part by someone who uses it might identify price disconnects. The program prints the item's price on the supply paper-

Here Secretary Orr attends Commander's Call at the base theater at Lajes AB in the Azores in April of this year.

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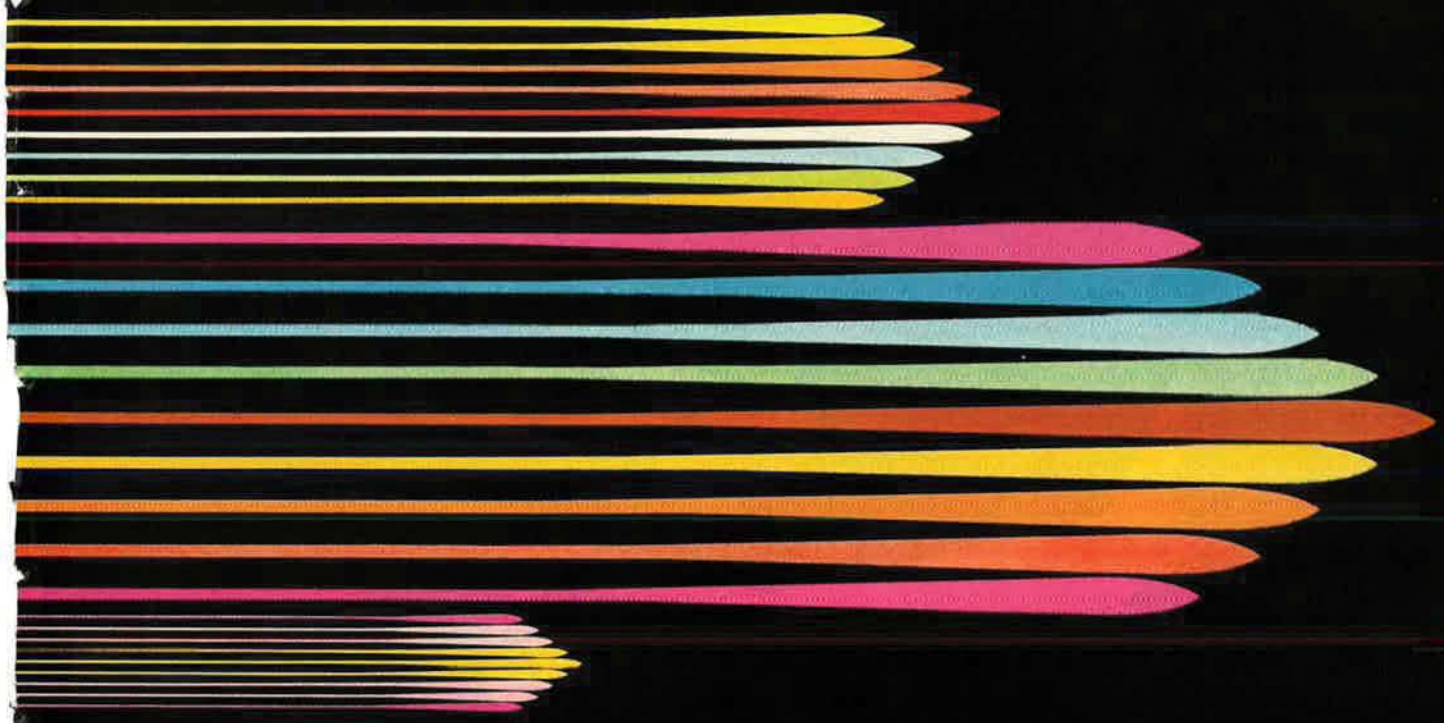

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work when someone draws it from Base Supply. He or she then compares the price with the item itself—an unusual price increase can become very apparent.

An example occurred in Texas where an NCO complained to his Zero Overpricing monitor when his organization was charged $645 for a computer disk pack he could buy downtown for $95. As a result of this, we will buy the disk packs for $67 (quantity buy price).

• **Industry Pay:** At the AFA convention last September, I indicated that we would be taking a very, very hard look at overhead, at blue- and white-collar wages, and at all of the things that go into the cost of a product. I said that it is *not* our business to tell industry how much to pay their employees. But it *is* our business to tell them how much the government can afford to pay for their products.

Hard Look at Wage Structure

We have been doing just that: looking hard at wage structures and telling companies that we may not be able to afford their products. We found, for example, that at one company the proposed pay increases in an eleven-month period amounted to twenty-three percent. With inflation running at seven percent or less, and with our military and civilian people looking at a pay cap this year, I'd have trouble explaining why the US Air Force should finance a major part of that twenty-three percent pay raise.

Last year, I established a Cost Management Panel to improve how we buy new weapon systems and control their costs. Among other things, the panel surveyed compensation in aerospace industries compared to compensation for workers in other manufacturing industries. They found that over a ten-year period, aerospace labor rates are considerably higher than comparable industry rates and growing faster. Aerospace labor rates were twenty-four percent higher ten years ago, but were approximately thirty-eight percent higher in 1981. Even when you allow for regional wage differences, aerospace wage rates exceed area averages by twenty-five percent.

A related area we are investigating is executive compensation. Last fall, the Defense Contract Administration Services looked at executive compensation. The audit determined that in the government products division of one company, executive compensation (salary and bonus) was *forty percent higher* than market levels and their incentive compensation exceeded that of all companies compared.

The effect of these increased rates on the Air Force is obvious. But they also affect the contractor. They mean that the military can spend less on the required systems and spares, and that causes layoffs, production cutbacks, and other disturbances. Quite simply, they adversely impact stability in the aerospace industry.

How Do We Buy?

We in the Air Force have become very discriminating in our approaches to how we buy systems and parts and continue to emphasize some promising ways to buy better and cheaper, two of which deserve comment.

• **Competition:** Buying weapons and parts for the military, especially aerospace weapons and equipment, involves high technology, intensive development, and technical complexity. The result, too often, is that only one contractor is particularly suited to start making or continue making a weapon system. Very often, as with jet engines, we have considerable difficulty "breaking out," say, the hot section of a jet engine so several companies can compete to make it—especially if we have already bought several hundred of those engines. Very often, the sheer complexity of the data makes prohibitive the interpretation of that data and its translation into a realistic Request for Proposal (RFP).

We are, nonetheless, committed to acquiring data needed on purchases and to encouraging competition in any way we can. As an example, we recently competed a major F-16 subsystem and the unit price dropped from $156,000 to $90,000, the predicted time between failure rate went from 300 hours to 500 hours, and we saved more than $50 million.

• **Dual-Sourcing:** To guarantee we get the most for our money we have instituted greater use of dual-sourcing: in other words, having two sources continuously producing a system. This gives us the production breadth we need, and stimulates industry as well. It has worked well on contracts for the GAU-8 30-mm ammunition and gun barrels, the F-16 canopy transparency, and the ACES II ejection seat.

For the future, we plan to use this technique on such contracts as the IIR Maverick, AMRAAM, Peacekeeper components, and GLCM components.

* * *

We have been working hard at managing costs and the way we do business. While this fact may not make many headlines, Air Force people should know two things about the subject of excessive costs: (1) in most cases where these practices are coming to light, we in the Air Force are the ones illuminating them, and (2) we are not merely looking for inefficient practices, we are also finding better ways of identifying them and correcting those we can control.

But a substantial challenge remains: Buying the weapons and parts the Air Force needs is a formidable task—we must not let that intimidate us. I am proud of our Air Force people and the way they are rising to this challenge. Without continued vigilance and attention, we will not have stories of success like those I have described. We—the Air Force—are getting to be pretty tough customers, and we're going to get even tougher. Because the need to bring our defenses to their peak levels is essential to our nation's safety, we must do it wisely and with the utmost care. Only then will we retain the public support so necessary in our democratic society. ■

Verne Orr was appointed to his post by President Reagan, with whom he served in the California state government and during the Presidential campaign and transition. He served in the Navy during World War II, and was discharged from the Naval Reserve in 1951 as a lieutenant commander. He earned a bachelor of arts degree from Pomona College and a master's in business administration from the Stanford Graduate School of Business.

Recovering from the 1970s

BY GEN. CHARLES A. GABRIEL, CHIEF OF STAFF, USAF

USAF's top conventional priority is improved readiness for existing forces.

IN 1757, in *Poor Richard's Almanack,* Ben Franklin wrote: "A little neglect may breed mischief: for want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost."

Ben Franklin's well-known saying comes near to describing the condition of our forces and equipment just a few years ago. We were close to the bone in fulfilling our missions. Because of extremely tight defense budgets in the 1970s, readiness and sustainability efforts were delayed to fund badly needed modernization and a modest expansion of our force structure seriously depleted in the Vietnam years. We simply didn't have the dollars to do it all—to keep our people, facilities, and equipment as ready for combat as they need to be. Our combat capability—our readiness to go to war now if necessary and to sustain our forces—has to remain strong to deter war and to win should deterrence fail.

The operations and maintenance (O&M) funding available in the late 1970s was not enough to keep our bases in repair, to support our people properly, and to get the most from the new equipment we were bringing on line. Many of our bases were in sad shape: ramps needed repair, roofs were leaking, and buildings needed paint. The morale of our people also suffered because of unsatisfactory living and working conditions, erosion of pay and benefits, and the perceived lack of support from the American public.

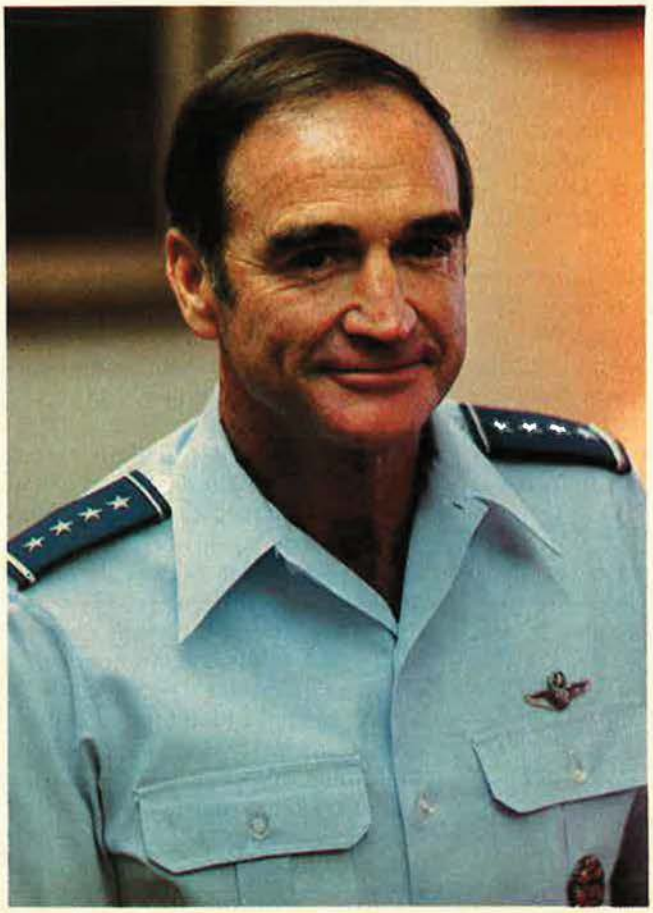
In Europe, for example, because of serious O&M deficits, we had to cancel participation in many NATO exercises. We curtailed activities like our squadron exchange program, and ended individual crew exchanges with our allies. We had initiated many of these programs but couldn't afford to take part in them. We also had to cut weapons training deployments for F-111 units, delay the necessary movement of munitions closer to our combat aircraft, and reduce the buy of critical items such as chemical warfare protective suits. Important projects for our people were eliminated or reduced. Dormitory, dining hall, and workplace improvements were canceled, and maintenance was restricted to emergency-only requirements. The civilian work force was cut, further burdening the already fully employed military force.

Inadequate funding for defense was made even worse by extremely high inflation rates that stripped the buying power of the dollar twenty percent or more and by the demands of increased force structure, mission additions, and other readiness initiatives that had to be paid for from an ever smaller pot of money. If this situation had continued, we would have had to cut mission elements or bases, aircrew proficiency would have dropped, munitions would have remained in the wrong places, and morale would have worsened—all eroding readiness and sustainability.

The Soviets Grow Stronger

While we had these difficulties in keeping our forces strong and ready, the Soviet Union continued its massive growth in military power. With this strength, the Soviet Union is more confident in its ability to attain political objectives through force and intimidation. We need only observe the continuing Soviet brutality in Afghanistan, the political coercion of Poland, and the increasing subversion in Latin America, Africa, and Asia.

These aggressive actions are clear evidence that we cannot let down our guard. We can't count on



General Gabriel: ". . . preparedness is what the American public wants, and it is what we intend to ensure. Nothing less will be enough. We've come a long way in the past couple of years in keeping our forces strong and ready, but we still have a distance to go. We cannot lack Franklin's proverbial 'nail.' " (USAF photo by Mickey Sanborn)

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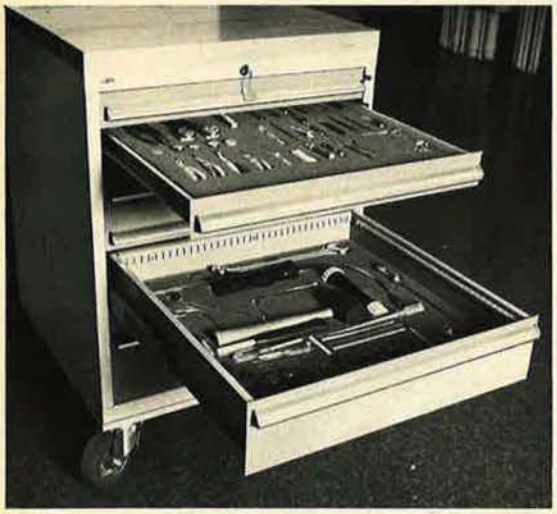

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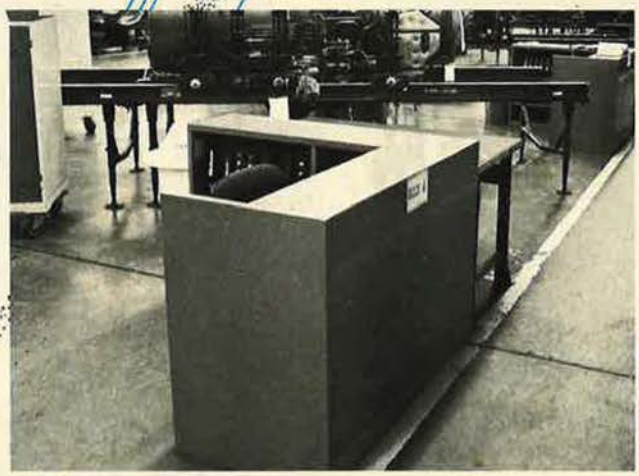

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a long period of warning that would allow us the luxury of time, as we had before World War II, to get ready for war. The peacetime readiness of our forces is critical to the come-as-you-are war that we might face with little or no warning. To continue to deter war and to keep the nuclear threshold high, we need strong conventional forces—well-trained people, effective matériel, and the ability to get our forces and their equipment rapidly to where they are required.

Over the past three years, we have made good progress in building capable and ready forces. With the commitment of this Administration, Congress, and the American public to increased funding for defense, we are doing everything we can to ensure that each unit has the well-trained people and the right matériel needed to fight. Let there be no mistake. We are strong now and getting stronger.

Our highest conventional priority is to improve the readiness of our existing forces. Simply put, readiness and sustainability are what enables us to get the most out of what we've got. We have to make our current force structure work to the best advantage with spares, munitions, and so forth. Otherwise, there's a false economy in not using well what we've spent so much for. During the last two years alone, we doubled the funding for readiness and sustainability, and we are now starting to see positive results. It will take a while to recover from the 1970s, but we've made a good start. Our crews are flying more—training more effectively—and our stocks of munitions and spare parts are increasing.

Readiness and sustainability may seem abstract. They are sometimes reduced to status reports, C-ratings, or other statistical tools for managing our resources. Unfortunately, the numbers game often blurs the more important realities behind the statistics. Discussions of readiness and sustainability shortages do not have the "glamor" of hardware debates on strategic systems like the B-1B and Peacekeeper; they do not have a special advocacy since they cut across all our mission areas.

There isn't any mystery to what readiness and sustainability mean down where it counts—with our people in the active and reserve forces, in the equipment with which they would have to fight, and on the bases from which the Air Force does its fighting. There, readiness and sustainability have practical, concrete meanings—spares to maintain our planes and fix our equipment, fuel to fly, the right mix of munitions to do the job effectively the first time, high-quality training and realistic exercises that give our people the combat-like experience to make them proficient and keep them that way, and hands-on training for our skilled mechanics who have to turn aircraft quickly. Readiness and the sustainability that supplements it are the very lifeblood of our combat capability.

Readiness is a pre-D-Day measure, carrying into the initial stages of combat, while sustainability is a post-D-Day measure continuing throughout the conflict as the industrial base cranks up for wartime surge. The primary ingredients of readiness and sustainability include people, training, logistics (equipment and supplies), and mobility. How well we're doing in these areas—along with force structure and modernization—is a good indicator of our ability to fight.

Keeping Faith With People

Our capability as an air force ultimately depends on our people. Last year's combat in the Bekaa Valley and in the South Atlantic showed once again that well-trained, well-led, and highly motivated people win battles. We have high-quality people and need them to stay with us. When a pilot resigns, when a crew chief hangs up his or her uniform, years of irreplaceable experience are lost. The best equipment that money can buy will not carry the day without the right people. The American public correctly demands that we be ready because, as Gen. Omar Bradley once remarked, "In war, there is no second prize for the runner-up."

In the late 1970s, when pay and benefits lagged behind comparable civilian compensation, many of our experienced people left us. However, because of a renewed sense of patriotism, increased public support, and substantial pay raises in FY '81 and FY '82, there has been a dramatic turnaround. As a result, our combat capability is improving. Last year was our best recruiting and retention year, and 1983 looks even better. In FY '82, ninety-four percent of new recruits had high school diplomas compared to eighty-three percent in FY '80. Thus far in FY '83, ninety-eight percent of our recruits are high school graduates.

Retention statistics are also impressive. In FY '79, we lost nearly three out of every four pilots after their initial tours, but now nearly three out of four are staying in. First-term reenlistments have almost doubled in the last three years. We have a much more experienced, higher quality, and better trained force to man our modern weapons than we had a couple of years ago.

We have to keep faith with our people—pay them fairly and provide them the entitlements they have earned and deserve. Even though recruiting and retention look great now, we are aware of how quickly a combination of pay caps, erosion of entitlements like retirement, a declining youth population, a stronger economy, and private sector competition for skilled people can reduce gains we've made. Despite recent successes, we still have shortages and low experience levels in important skills, problems which we're working hard to correct.

How Training Pays Off

Better, more realistic training is a key reason why the combat preparedness of Air Force units has improved substantially over the past thirty months. Our tactical aircrews now fly an average of about nineteen hours per month, nearly a fifty percent increase over the FY '78 low of thirteen hours, and we plan to up that to about twenty hours next year.

We train as we intend to fight. Aggressive, realistic training exercises, such as Red Flag, contribute greatly to readiness and the development of creative tactics. We exercise, train, and plan closely with our sister services and our allies. Worldwide deployments and joint exercises are frequent. Last year, 524 active and reserve fighters deployed across the oceans, and more than ninety-eight percent of them

arrived in place on time and ready to fight. Moreover, we have substantially improved the quality of training for our enlisted personnel in technical and critical specialties.

Safety is an integral part of operational readiness. Even with the rigors of tough training, realistic exercises, and frequent deployments, 1982 was the safest year on record, with 2.33 major accidents per 100,000 flying hours. The continuing decrease in the fighter/attack rate was a main factor in establishing this record. The 1982 fighter/attack rate of 4.8 was the lowest in Air Force history, bettering the record lows set in each of the previous two years. Last year, for example, the F-15 had the lowest peacetime accident rate of any US fighter aircraft in history.

The Importance of Logistics

Logistics—including spare parts and munitions—plays a critical part in readiness and sustainability for peacetime training, the initial surge, and staying power. When we introduced new weapon systems in the late 1970s, replenishment spares were not fully funded. At the same time, inflation and reduced quantity buys caused the prices of spares to increase. Beginning with the FY '81 budget, we began to make headway against these shortfalls. We still have a way to go, but we are making progress. Production lead times (two years or more for some spares), increasing requirements, and cost growth have delayed satisfying our needs. But we're seeing solid improvements now, and our stocks are going to get even better.

In FY '82, we reached new highs in mission capable (MC) rates for the A-7, F-4, F-111, F-15, and E-3A aircraft. The increase in F-111 and F-15 rates was particularly impressive. Last year, the F-15 and F-111 MC rates were about twenty percent higher than in FY '79. Sustainability of our tactical forces has also improved significantly. We now have sufficient spares to generate three times the number of tactical sorties we could fly in 1980.

We're very proud of our modern fighters. Our F-15s and F-16s are the best in the world, as was demonstrated in Lebanon last year. One historical comparison illustrates graphically the capability of these aircraft. At the peak of the strategic bombing campaign against Germany in August 1944, American B-17s and B-24s flew nearly 23,000 sorties. With these bombers averaging a little less than seven sorties per month, this required a force of nearly 3,500 aircraft and more than 34,000 crew personnel. In addition, more than 40,000 fighter sorties were required to protect these bombers. By comparison, with the F-16 we could deliver the same payload with less than one-fourth the number of aircraft and only one-thirtieth the number of flying personnel. Furthermore, the F-16 provides its own "fighter escort." We're working on improvements to our fighters' air-to-surface, night, and adverse weather capabilities to meet the growing threat. Our emphasis will be on better avionics and munitions.

Munitions are an important part of a modern fighting force—we need effective munitions in adequate numbers. Years ago when General LeMay was Chief of Staff and I was a major on the Air Staff, he asked: "If we have a war in Europe, are we going to run out of airplanes or munitions and spare parts first?" Fortunately, we came up with the right answer—airplanes. If we run out of spares and munitions first, we would have a very expensive static display with nothing to drop or shoot. We have to support our force structure fully to get the most for our money.

We're working hard to improve our stock of air-to-air and air-to-surface munitions. From FY '81 to FY '82, we more than doubled funding for such munitions. Over the past decade our research and development efforts have yielded new generations of munitions highly effective in destroying more targets while reducing aircrew and aircraft losses. For example, as British sources reported, US-built AIM-9s scored twenty-four hits in twenty-seven launches in the South Atlantic conflict.

The Need for Mobility

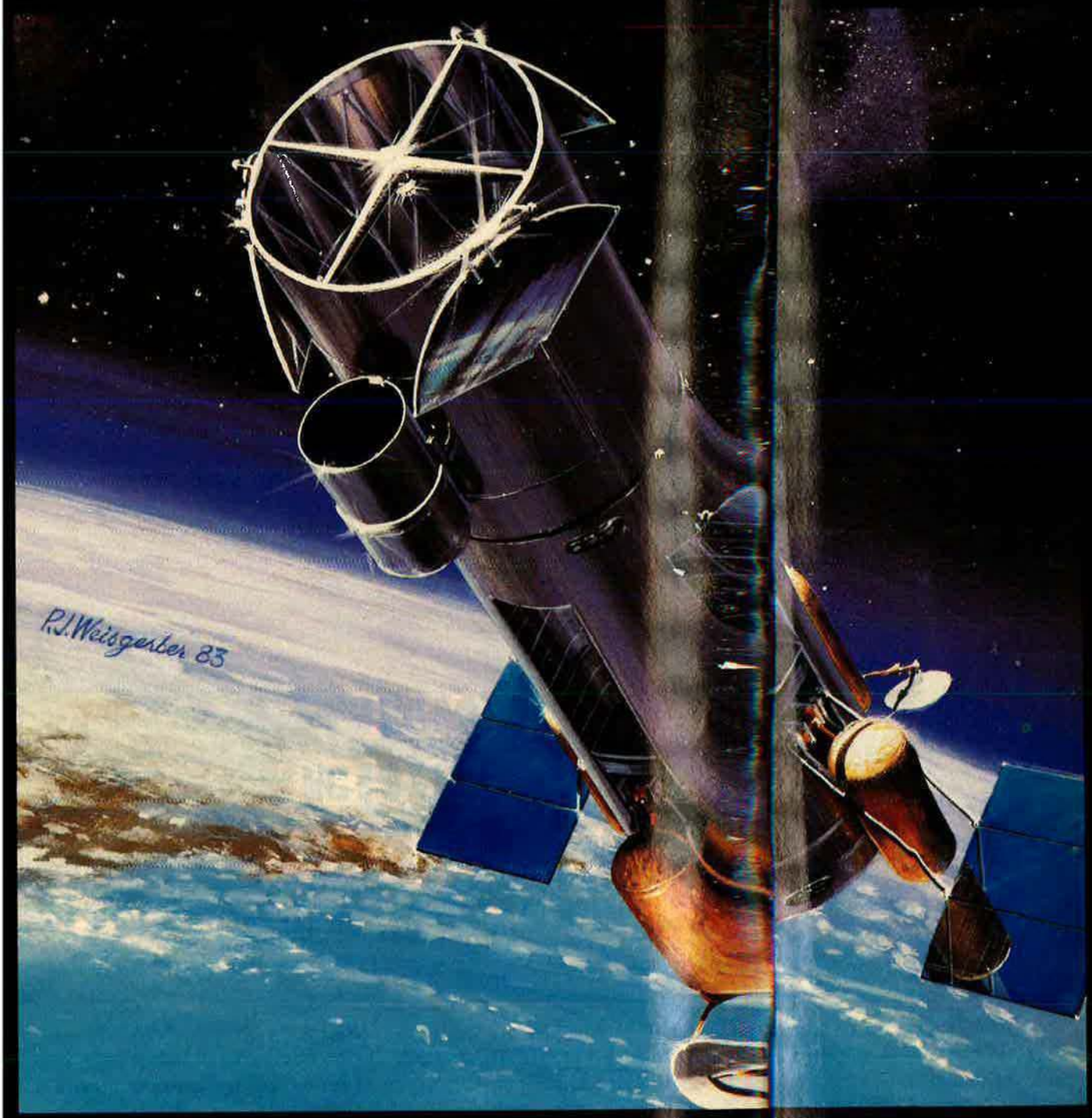
No matter how good our equipment, tactics, and training, our forces are of little value if we cannot get them to the battle in time. Since we cannot control the time and place of combat, we have to be able to move quickly to defend American interests anywhere in the world. We have had serious shortages in airlift for some time, and we are moving to reduce them. Modification of the current fleet and more spare parts have substantially increased airlift capacity. Over the next few years, we will increase surge capability—double for the C-5 and a third more for the C-141. Moreover, with procurement of the C-5B and KC-10, by the end of the decade we will have twice the airlift capability (in millions of ton-miles per day) that we had in 1980.

Last year, we completed the C-141 "stretch" program, increasing cargo volume by almost a third and providing an inflight refueling capability. The C-141 project was finished ahead of schedule and under budget. We're also significantly increasing our refueling capability by reengining our KC-135 tankers with fuel-efficient CFM56 engines. This program will increase fuel offload by one-half, cut fuel consumption by twenty-five percent, and reduce noise and emissions. The program will extend the operational life of the airframes well into the next century.

Since the potential for any type of conflict is always present, our forces have to be ready to fight at any time, and they need the staying power to win. Such preparedness is what the American public wants, and it is what we intend to ensure. Nothing less will be enough. We've come a long way in the past couple of years in keeping our forces strong and ready, but we still have a distance to go. We cannot lack Franklin's proverbial "nail" that would determine the difference in battle. ■

Gen. Charles A. Gabriel graduated from the US Military Academy in 1950. He flew 100 combat missions during the Korean conflict and was credited with two MiG-15 victories. After staff positions in both the US and Europe, he was assigned as commander of a reconnaissance wing in Thailand in the early 1970s, where he flew 152 combat missions in F-4s. Subsequently serving in key posts in TAC, Korea, and Hq. USAF, General Gabriel assumed command of USAFE in August 1980. He was assigned as Air Force Chief of Staff in July 1982.

Laser weapon systems . . .



for defense. TRW has pioneered high-energy chemical laser technology used in the ALPHA program, sponsored by the Defense Advanced Research Projects Agency (DARPA) and the Air Force. The ALPHA program is demonstrating key technologies in a ground test program for future military applications of space-based lasers. Such systems will need novel surveillance, communications, command and control, and battlefield management . . . all under development at TRW.

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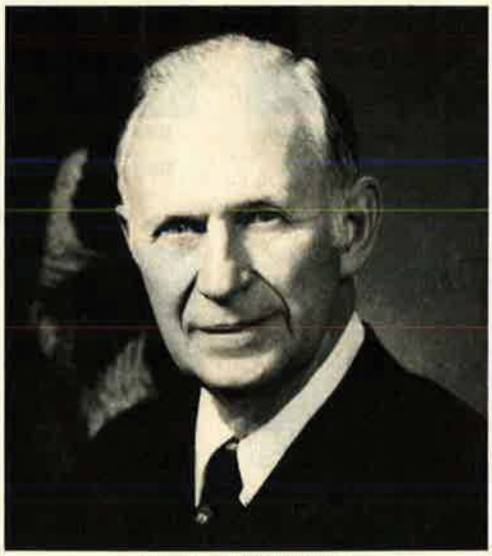

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(As of August 15, 1983)

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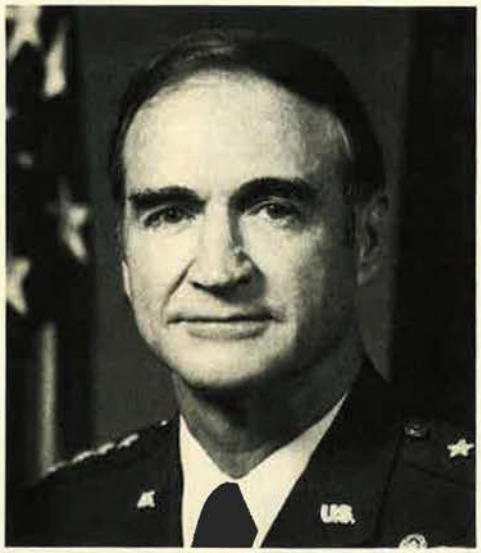

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Space Communications Div.
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AFLC International Logistics Ctr.
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Wright-Patterson AFB, Ohio

Cataloging and Standardization Ctr.
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Battle Creek, Mich.

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Oklahoma City Air Logistics Ctr.
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22d Air Force
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Blytheville AFB, Ark.

45th Air Div.
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Gen. Richard L. Lawson
Deputy Commander in Chief,
US European Command
Vaihingen, Germany

Responsible for ensuring maximum combat readiness of forces assigned to subordinate commands and advises US CINCEUR on the formulation of policy for the conduct of combat operations within the entire European theater.

THREE STARS

Lt. Gen. James A. Abrahamson
Associate Administrator,
Space Transportation Systems
NASA
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Responsible for program content and execution, as well as for resources for three major space centers and a space laboratory in support of the Space Shuttle development and operations.

Lt. Gen. James R. Brickel
Vice Director, Joint Deployment Agency
Deputy Commander in Chief,
United States Readiness Command
MacDill AFB, Fla.

Assists CINCREDCOM in providing a general reserve of combat-ready forces to reinforce other unified commands, and in mobilization planning for a unified command comprised of all CONUS-based major combatant general-purpose Army and Air Force forces.

Lt. Gen. William E. Brown, Jr.
Commander, Allied Air Forces Southern Europe
Deputy Commander in Chief, USAFE,
for the Southern Area
Naples, Italy

Conducts air operations and manages the total Southern Region land-based air resources in support and defense of the region's NATO nations.

Lt. Gen. Lincoln D. Faurer
Director, National Security Agency
Chief, Central Security Agency
Fort Meade, Md.

Organizes and manages the resources of the National Security Agency in accomplishing national intelligence missions under the direction of the Secretary of Defense.

Lt. Gen. Philip C. Gast
Director of the Defense Security
Assistance Agency
Office of the Secretary of Defense
Washington, D. C.

Manages activities relating to the transfer of US defense equipment, services, and military education and training by sale or grant to friendly countries.

Lt. Gen. Robert T. Herres
Director, Command Control and
Communications Systems
Joint Chiefs of Staff
Washington, D. C.

Develops policies, plans, and programs for the JCS to ensure present and future C^3 support of the country's unified and specified commands and the National Command Authority.

Lt. Gen. John L. Pickitt
Chief of Staff, Combined Forces Command
Deputy Commander US Forces, Korea
Deputy Commander in Chief UN Command,
Korea
Seoul, South Korea

As the second senior military representative in the Republic of Korea, he assists CINCUNC in exercising combined command of UN Forces and is the senior US representative in Status of Forces Agreement negotiations.

Lt. Gen. Winston D. Powers (designee)
Director, Defense Communications Agency
Washington, D. C.

Coordinates and manages all United States defense communications requirements.

Lt. Gen. John S. Pustay
President, National Defense University
Fort McNair, Washington, D. C.

Directly responsible to the JCS Chairman for the overall direction and operation of a full range of university programs (NWC, ICAF, AFSC) that conduct courses in joint and combined organization planning and operations and provides advice to the JCS on all aspects of professional military education and training in the armed forces.

Lt. Gen. Richard K. Saxer
Director, Defense Nuclear Agency
Washington, D. C.

Provides support, staff advice, and consolidated management of all US nuclear weapons, stockpiles, testing, and research.

Lt. Gen. Herman O. Thomson
Director, J-5
Joint Chiefs of Staff
Washington, D. C.

Responsible for JCS planning, formulation, and analysis of US worldwide defense policy.

OFFICE OF THE SECRETARY OF DEFENSE

Maj. Gen. Donald L. Lamberson
Deputy and Assistant for
Directed Energy Weapons
Office of the Secretary of Defense
Washington, D. C.

Responsible for integrated management of all DoD directed-energy research, development, and technology demonstration programs.

Maj. Gen. Earl G. Peck
Director for Intelligence and Space Policy
Office of the Secretary of Defense
Washington, D. C.

Principal advisor to DoD for all intelligence-related activities, including mapping, charting and geodesy, use of outer space, and related subjects.

Maj. Gen. Stuart H. Sherman, Jr.
Staff Director, Fifth Quadrennial Review
of Military Compensation
Office of the Secretary of Defense
Washington, D. C.

Responsible for leading a total review of the principles and concepts associated with the military estate program, retirement system, and special and incentive pays.

Maj. Gen. Edward L. Tixier
Deputy Assistant Secretary of Defense
(Near Eastern and South Asian Affairs)
Office of the Secretary of Defense
(International Affairs)
Washington, D. C.

Directs the coordination and development of DoD aspects of international security affairs, to include military assistance programs for countries and regional organizations in the designated area.

OFFICE OF THE JOINT CHIEFS OF STAFF

Maj. Gen. Maurice C. Padden
Deputy Director, Operations
National Military Command System, J-3
Joint Chiefs of Staff
Washington, D. C.

Assists the Director of Operations, J-3, in exercising JCS command control and staff supervision over joint operational matters, including exercises and operational planning and direction.

Maj. Gen. Click D. Smith, Jr.
Deputy Director for Logistics
(Strategic Mobility), J-4
Joint Chiefs of Staff
Washington, D. C.

Assists the Director, J-4, in advising the JCS Chairman on joint and combined worldwide logistics/transportation matters, and evaluates the capabilities of joint and specified commands to logistically support current operational activities, contingency operations, and plans.

USCENTCOM/JDA/USREDCOM

Maj. Gen. James I. Baginski
Director of Deployment,
Joint Deployment Agency
MacDill AFB, Fla.

Directs worldwide joint service mobilization deployment planning and coordination for the Joint Chiefs of Staff.

Maj. Gen. George A. Edwards, Jr.
Director, J-5 (Plans and Policy)
US Readiness Command
MacDill AFB, Fla.

Principal advisor to USCINCRED on plans, policies, tactics, and procedures for rapid and effective deployment of combat-ready forces.

Maj. Gen. Robert C. Taylor
Deputy Commander, US Central Command
MacDill AFB, Fla.

Deputy Commander of a Unified Command responsible for US military and security interests in a nineteen-country area in the Persian Gulf, Horn of Africa, and southwest Asia.

NATO/SHAPE/EUCOM

Maj. Gen. Spence M. Armstrong
Chief, United States Military Training Mission
Dhahran, Saudi Arabia

Responsible for coordination and integration of all military aspects of the US security assistance program to Saudi Arabia.

Maj. Gen. Leon W. Babcock, Jr.
Deputy Commander, 6th Allied
Tactical Air Force
Izmir, Turkey

Assists the Commander, 6ATAF, as the head of a multinational air force that conducts air operations in support of ground forces and provides air defense of the southeastern NATO region.

Maj. Gen. Bill V. Brown
Chief of Staff, AIRSOUTH
Hq. Allied Forces Southern Command
Naples, Italy

Assists COMAIRSOUTH in conducting air operations and managing the total southern region land-based air resources in support of the defense and preservation of the integrity of NATO nations in the southern region.

Maj. Gen. James R. Brown
Assistant Chief of Staff for Operations, SHAPE
Mons, Belgium

Responsible for assisting in the development and implementation of operational and contingency plans and formulation of force requirements for Allied Command Europe.

Maj. Gen. Louis C. Buckman
Chief, JUSMAG Greece
Hellenikon AB, Greece

As the senior US military representative in Greece, represents SECDEF with the government of Greece, assuring that US policy is followed in planning and implementing the military aspects of the security assistance program.

Maj. Gen. Lawrence D. Garrison
Air Deputy, AFNORTH
Hq. Allied Forces Northern Europe
Kolsaas, Norway

Principal advisor to AFNORTH on all allied air operations in the command.

Maj. Gen. Donald P. Litke
Commander, United States Logistics
Group (TUSLOG)
Ankara, Turkey

As the senior US military representative in Turkey, provides all logistical support to USAFE, SAC, MAC, US Army, Coast Guard, and other federal agencies in Turkey.

Maj. Gen. William G. MacLaren, Jr.
Assistant Director, Command Control and
Communications Division
International Military Staff,
NATO Headquarters
Brussels, Belgium

Primary interface on communications matters for senior military, civilian, and commercial officials from all NATO nations and commands.

Maj. Gen. Leighton R. Palmerton
Commander, NATO AEW Force
Geilenkirchen, Germany

The senior US military official responsible for implementing the operational phase of the NATO AWACS program.

Maj. Gen. Davis C. Rohr
Director, J-5, (Plans and Policy)
US European Command
Vaihingen, Germany

Develops plans, programs, and policies on all matters pertaining to war plans, force structure, and other elements of JCS support by USCINCEUR in coordination with other unified and specified commands.

Maj. Gen. Harold W. Todd
Chief of Staff, 4th Allied Tactical Air Force
Heidelberg, Germany

Assists the Commander, 4ATAF, in the conduct of vital allied tactical and air defense operations in the central NATO region, utilizing the combined air assets, personnel, and resources committed to 4ATAF by the US and her allies.

PACIFIC COMMAND

Maj. Gen. Robert E. Messerli
Deputy Chief of Staff
Hq. Pacific Command
Camp Smith, Hawaii

Assists the Chief of Staff, PACOM, in supporting CINCPAC mission to advance the national policies and interests of the US in the Pacific and Indian Ocean areas, to include assisting in the preparation of plans, conduct of operations and exercises, and coordination of all PACOM assigned and gained forces.

SOUTHERN COMMAND

Maj. Gen. William E. Masterson
Deputy Commander in Chief, USSOUTHCOM
Commander, US Southern Air Division, TAC
Howard AFB, Panama

As Deputy CINC, Southern Command, responsible for all joint military matters in Latin America; as Commander of USAF Southern Air Division, responsible for USAF support to Southern Command.

FEDERAL AND DEFENSE AGENCIES

Maj. Gen. Schuyler Bissell
Deputy Director
Defense Intelligence Agency
Washington, D. C.

Assists the Director of DIA in providing timely military intelligence upon which long-range military plans are formulated.

Maj. Gen. Joseph H. Connolly
Deputy Director (Acquisition Management)
Defense Logistics Agency
Cameron Station, Va.

Responsible for the agency's worldwide contracting activities to include providing all the services and DLA a wide range of technical and administrative contract support.

Maj. Gen. Thomas G. Darling
Commandant, Armed Forces Staff College
Norfolk, Va.

Serves as commandant of the joint service college that provides intermediate-level schooling for field-grade officers of the US military, certain allied nations, and civilians from various federal agencies.

Maj. Gen. William W. Hoover
Director of Military Applications
Department of Energy
Germantown, Md.

Coordinates DoD nuclear weapons research, development, test, production, and readiness requirements with the Department of Energy's nuclear program, and provides program direction to nuclear weapons laboratories and field offices.

Maj. Gen. Richard D. Murray
Commander, Army and Air Force Exchange
Service
Dallas, Tex.

As commander of a joint command ranked as the seventh largest retailer in the US, he is responsible for policy and operational management of all AAFES merchandising outlets in CONUS and overseas.

Maj. Gen. M. Roger Peterson
Deputy Director
Defense Logistics Agency
Cameron Station, Va.

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Maj. Gen. George B. Powers, Jr.
Commander, Defense Construction Supply Center
Defense Logistics Agency
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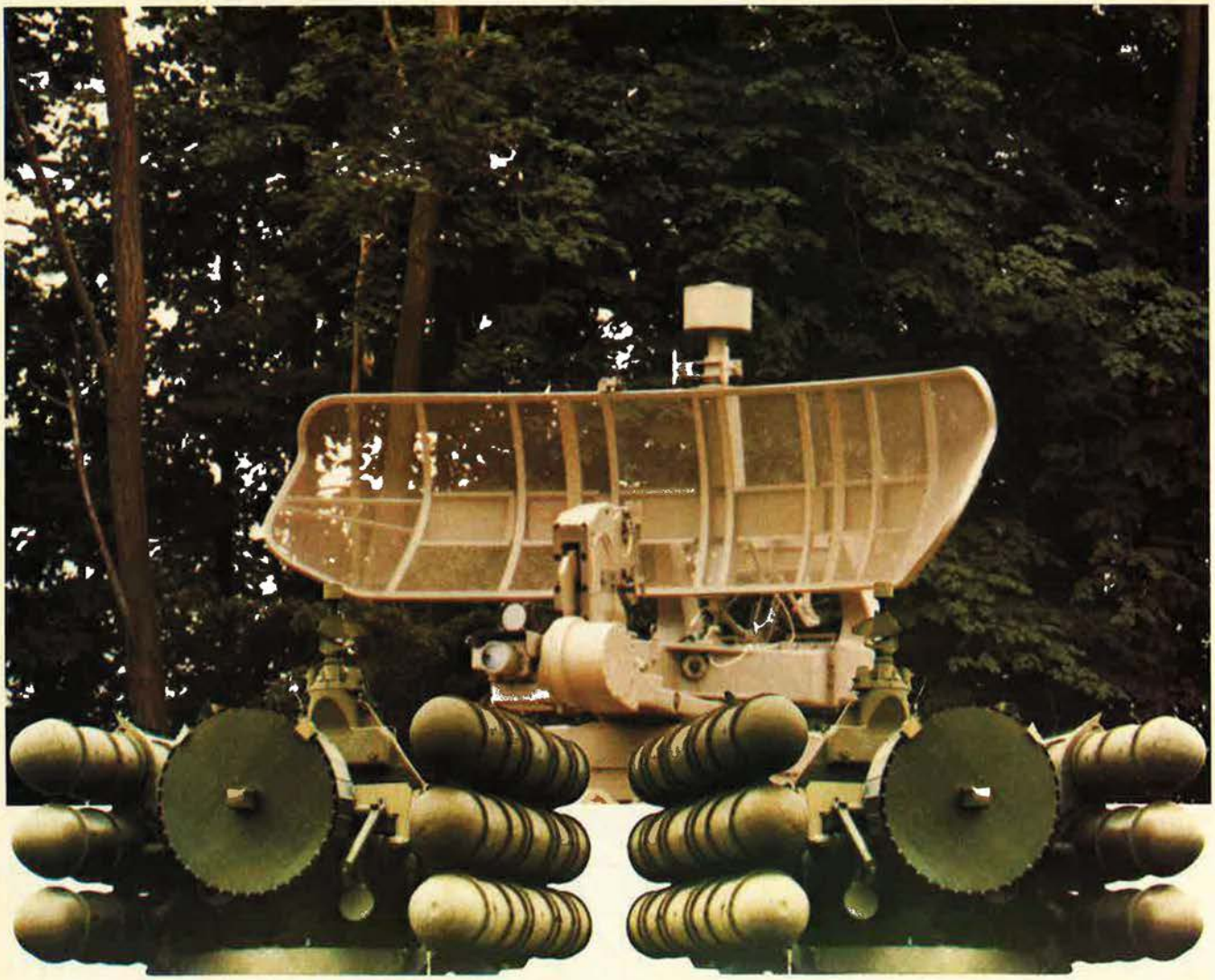

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5013

As he begins his tour as the eighth Chief Master Sergeant of the Air Force, CMSgt. Sam E. Parish talks about the tasks ahead. His reputation precedes him in his new job as . . .

A PEOPLE-ORIENTED CHIEF

BY CAPT. MICHAEL B. PERINI
CONTRIBUTING EDITOR

THE new Chief Master Sergeant of the Air Force (CMSAF) has made this pledge: "If anyone in USAF sees me changing from being their representative, I almost beg them to please let me know."

There is little doubt that CMSgt. Sam E. Parish, the eighth to wear the laurel-wreathed chevron and insignia of the CMSAF, will be anything but an excellent spokesman and ambassador for today's airmen.

The forty-five-year-old Chief was selected following a four-month search for a replacement for CMSAF Arthur L. "Bud" Andrews, who retires November 1. The search included screening nominees from each major command, separate operating agency, and direct reporting unit.

In his new post, Chief Parish is responsible to the Air Force Chief of Staff and to the Secretary of the Air Force, keeping them informed of matters affecting the duties, welfare, and morale of Air Force enlisted people.

Chief Parish knows that his new job will be a tough one, but he doesn't seem to mind the worldwide responsibility of representing more than 483,000 airmen. "Being selected really tops off a lifelong career in the Air Force," he said.

Chief Parish said he will "give his all" to the new job. "I can only be as good, however, as the enlisted people throughout the Air Force want me to be," he said.

The Chief said he will need feedback from the enlisted force as to how well he is doing in working their concerns. "I expect constructive criticism, and I listen to views no matter how different they may be from my own," he added.

People-Oriented

Chief Parish is the second Strategic Air Command Senior Enlisted Advisor in four years to be named CMSAF. Retired CMSAF James M. McCoy, SAC's first senior enlisted advisor, was CMSAF from 1979 through 1981.

Chief Parish's reputation at SAC was one of a "people-oriented chief." Gen. Bennie L. Davis, SAC Commander in Chief, describes Chief Parish as a "consummate speaker, an effective career advisor, a competent manager, and a people-sensitive leader."

"Let's face it, I love people. Without people the Air Force is nothing," the new CMSAF said.

"I know this has been said before, but I really believe that if you take care of your people and their quality of life, they will take care of the mission," Chief Parish said.

The CMSAF rates today's enlisted force highly. "It is the best ever," he said.

"These men and women are the sharpest, brightest, and could be the most disciplined enlisted force

In 1962, then SSgt. Sam Parish was stationed at ESD.

we've ever had in uniform," he emphasized.

Part of taking care of people, Chief Parish said, is "maintaining high standards of dress and appearance." The Chief believes that Air Force dress standards are "realistic." "Today's standards are much easier to meet than to devise ways to get around them," Chief Parish warned.

Decades of Experience

Chief Parish's career is marked by his involvement in the total military community. He admits that he has "never worked for a bad boss or had a bad assignment."

"Chief Parish's distinguished career has been characterized by his involvement in ways to improve both the skills and capabilities of our enlisted force and their quality of life," General Davis said.

That career began on December 7, 1954, at age seventeen, when he enlisted in the Air Force after attending Malone High School, Malone, Fla. Following basic military training at Lackland AFB, Tex., he was assigned to Chanute AFB, Ill., for training as a ground weather equipment operator. Completing the course as honor graduate in August 1955, Chief Parish was assigned to Wiesbaden AB, Germany, where he served as noncommissioned officer in charge (NCOIC) of weather communications.

In January 1960, he returned to Chanute for the weather observer technician course and again was designated the honor graduate. The Chief served as NCOIC of operational procedures for the 433L Systems Program Office at Air Force Systems Command's Electronic Systems Division, Hanscom AFB, Mass.

Chief Parish returned to Germany as the chief observer at Heidelberg from June 1966 until June 1969. He then transferred to Headquarters, Air Weather Service, Scott AFB, Ill., as the command's chief observer and, later, as chief, Observing Services and Procedures Division, for the Deputy Chief of Staff for Operations.

On January 5, 1973, Chief Parish was selected to attend the first class of the Air Force Senior NCO Academy, and in July of that year was chosen as the senior airman advisor for Air Weather Service. In October 1975, the Chief was assigned as the advisor, weather assignments, for Hq., Military Airlift Command's Deputy Chief of Staff for Personnel.

Chief Parish began his third tour of duty in Germany in August 1976 as the sergeant major for the Consolidated Base Personnel Office at Bitburg AB. He was tapped as senior enlisted advisor (SEA) for the United States Air Forces in Europe in November 1977, and selected as the 40th Air Division SEA in August 1980.

Prior to his selection as CMSAF, the chief had been serving as SAC's SEA, a position he had held since November 1981.

His military decorations, awards, and honors include the Legion of Merit, the Meritorious Service Medal with three oak leaf clusters, and the Air Force Commendation Medal. He was Electronic Systems Division NCO of the Year in 1962 and 1963; 2d Weather Wing Airman of the Year for 1967 and 1968; 7th Weather Squadron NCO of the Year from 1966 through 1968, and Air Weather Service Military Man of the Year for the St. Louis, Mo., area in 1972.

Chief Parish is married to the former Ingeborg Eva-Marie Zimmerman of Wiesbaden, Germany. "Inge provides the ideal complement to her husband's role as the top enlisted man. An active volunteer, her personal warmth and deep concern for Air Force families creates instantaneous rapport with the people she meets," said General Davis.

The Parishs have three sons: Sam Ellis II, Steven Errol, and Scott Eric.

What Happens to Discipline?

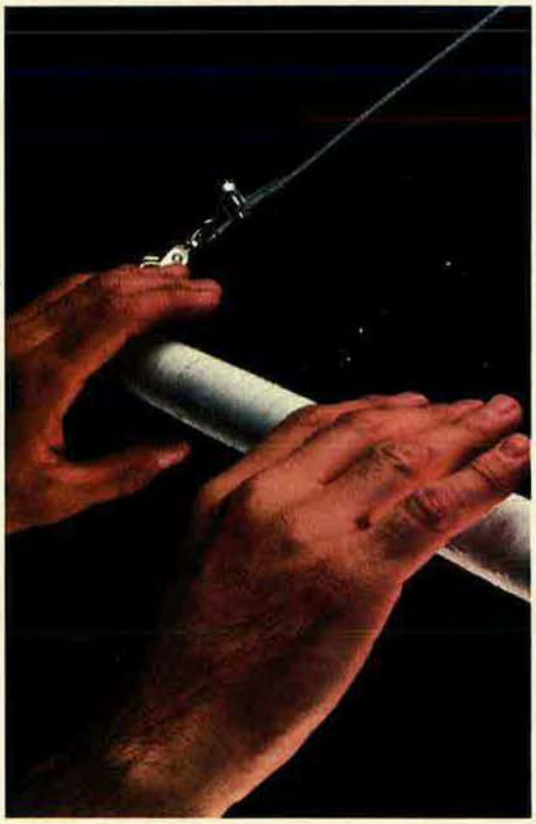
Though he believes strongly that today's enlisted force is the best ever, he said, "we as NCOs and supervisors have a tendency to let a few things slip.

"We don't pay as much attention to our young people as we should immediately after they arrive on station," he added.

Though this doesn't happen to everyone, the Chief admits, it does, he said, "happen to enough of our first-term airmen to be of concern."

In 1973, at Andersen AFB, Guam, Chief Parish got his "Typhoon Chaser" certificate from the 54th Weather Reconnaissance Squadron.

FLIGHT CONTROL



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For further information on command, control and communications systems, contact Business Development, Litton Data Systems, Van Nuys, California, (213) 902-4422, Telex 662643 LITTON DSD VAN. We'll fill you in on this system and other Litton developments at the AFA Convention, Booth 2103

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Chief Parish is shown here in 1979 in Berlin with his wife Ingeborg and their youngest son, Scott. (Photo by Thomas Farr)

Chief Parish related this example: "A young airman who has just finished basic and technical training is very well disciplined, he knows the rules, and is extremely courteous. But then the airman arrives at Base X for duty and things change. First, he reports to Sergeant Y, 'Sir, Airman Jones reporting for duty.' What are the first words out of the sergeant's mouth? 'You don't have to call me "Sir." I work for a living!'

"So what happens to the discipline? The airman says, 'Wow, I've had to sir and salute everything that moved, and now I don't have to sir this sergeant.' Second, the airman then walks out to the job and his new supervisor tells him, 'Forget all that you have learned in technical school. I'm going to show you the right way.' And finally, at the end of the day, the new airman goes to the dorm and guess who is the first person there he will more than likely meet? Not the sharpest airman, who is out participating in base activities, but rather the individual who's hanging around and possibly waiting separation from the service. Not our best example," Chief Parish stated.

"If the supervisor isn't paying attention, within the first two to three weeks a well-disciplined individual will become confused and unsure as to what Air Force life is really like," Chief Parish said.

Chief Parish recommends the following to help solve this dilemma. "NCOs, OICs, and first-line supervisors should get to know their people. They should know where their people eat, sleep, work, and play," he said.

"They've also got to know the families of those who work for them," Chief Parish emphasized. "An individual who has problems at home will bring these problems to the office," Chief Parish said.

Bright Future

The Chief believes that the Air Force faces three crucial challenges. "We need to continue to modernize our warfighting equipment, maintain the current weapon arsenal in good repair, and keep people and quality of life issues on the front burner," the Chief said.

The Chief sees a bright future for the Air Force. "If we can make the progress in the next ten to fifteen years that we've made in the past ten years, tomorrow's Air Force will be an unbelievable service. It's just too bad that they won't let me stay for another decade or so," the Chief said.

The Chief sees as a key element in this bright future, especially for the enlisted corps, the continued emphasis on the Professional Military Education (PME) program. "PME is the greatest step taken by the Air Force in the history of the enlisted corps. We now educate our people from a leadership/supervisor perspective, instead of that old school of hard knocks," he said.

"PME is vital to those who are planning to make the Air Force a career," he added.

In addition to recommending PME courses for those individuals making the Air Force a career, Chief Parish offers some other advice. "You've got to love what you are doing. Don't forget that the Air Force is a total commitment. If you are planning on getting rich by staying in, you're thinking the wrong way. It's like being married to something that you have as great a love for as you do the traditional family," he said.

Concerns and a Promise

What are the greatest concerns voiced by airmen today? "In my travels, I have found that airmen are concerned about the mood of Congress. They want to know what Congress is going to do to the retirement system, pay raises, and other quality of life issues to include the GI Bill, dependent dental care, and PCS entitlements," he said.

Chief Parish sees, as one priority during his tour, opening the lines of communication among the senior NCOs in the Air Force. "It is time for us to start talking to each other and to get more involved with our people," he said.

"As the senior enlisted leadership, I think that we have to concentrate more on our people and a little less on ourselves.

"If we can communicate with each other among ourselves as senior NCOs, then I think the communication with the junior NCOs and the airmen will naturally follow," he said.

Finally, Chief Parish makes this promise: "If ever any correspondence comes to the office, we will answer it. We might not be able to tell the person what they want to hear. We might not be able to do what they want done. But everyone will get an answer, a fair shake." ■

VIEWPOINT

Logic Is a Summer Casualty

By Gen. T. R. Milton, USAF (Ret.), CONTRIBUTING EDITOR

On national security issues, the decisions are too often driven by emotions rather than facts.

It is summertime as I write this and, as always, a difficult time to think seriously. The mind wanders from the debate on the MX to wonder why there are so few left-handed first basemen. Third basemen are undeviatingly right-handed. Why are not their opposite numbers invariably lefties? It is perplexing, but we must leave it there in the hope that a few enlightened owners will someday come along to straighten out their infields. Summertime notwithstanding, we have more serious worries.

There is, for instance, the apparently interminable MX debate, given new life by pre-election foolishness. General Scowcroft's commission came up with a series of recommendations worthy of King Solomon. It concluded, to the dismay of some, that the extreme vulnerability of silo-based ICBMs was still some years away, and thus we have time to restore the strategic balance. The commission recommended proceeding with MX, to the dismay of others, but cut the number to 100, meanwhile proposing the creation of mobile, single-warhead missiles against the time a few years hence when, in the judgment of the commission, the silos would be in peril. In spite of what seems an eminently reasonable set of recommendations, the commission might as well never have convened for all the effect it has had on the anti-MX movement.

The case for the MX would appear to be a persuasive one. Minutemen missiles have been roosting in their silos for a good many years, their technology is old, and their reliability must by now be suspect. Beyond that, we have our NATO allies to consider. If the citizens of this country shrink from accepting a new land-based missile, why should Europeans take on the cruise and Pershing IIs? Then, there is Geneva. As Congressman Les Aspin—no consistent friend of the Pentagon—has pointed out in his support for the MX, the Russians can scarcely be motivated toward an arms-reduction agreement when we, by refusing the MX, make the reduction unilateral. Even the most passionate opponents of nuclear war should be for the Scowcroft Report if they allowed logic and not emotion to rule their determination.

Logic, unhappily, has precious little to do with any national defense issue these days. The deteriorating situation in Central America is a long-range threat to our security, perhaps our very way of life. There can be no doubt, even among the most innocent, that the USSR, through its Cuban surrogate, is deeply involved.

Once upon a time there was something called the Monroe Doctrine, designed to deal with foreign meddling in Latin America. Admittedly, the Monroe Doctrine had certain imperialistic overtones that Latin Americans occasionally found objectionable, but, compared to the Brezhnev Doctrine, it was a model of restraint. The Reagan Administration's attempts to invoke a mild form of that old protectionist philosophy have aroused furious opposition. No one ever mentions the dangers posed by the Brezhnev Doctrine and its applicability to Cuba, Nicaragua, and any other Latin American nation that may fall to Communist revolution.

In the years before World War II, the United States was a provincial country, with its Army essentially a holdover from the Indian Wars and an Army Air Corps negligible in size compared to the air forces of Germany or Italy. In keeping with the generally isolationist sentiment of Americans in those days, the Navy was the first line of defense and, accordingly, was somewhat better treated.

Isolation made a certain amount of sense, even in the Thirties. Maybe our national strategy was introverted and narrow, but at least it was clear. Given the comforting protection of two great oceans, that strategy was to react only against a direct threat to our shores or those of our few possessions.

But isolationism should have disappeared when airplanes made ocean barriers nonexistent; and missiles, even more than airplanes, are oblivious of oceans. It is a concept as obsolete as another credo of the Thirties, the one which said the sound barrier was impenetrable by aircraft. Our oceans have not only failed as barriers, they now provide a hiding place for missile submarines, adding to our insecurity. Yet isolationism persists. It is hidden in the arguments against the MX, against any Latin American involvement, for nuclear freeze, indeed, in most of the arguments raised these days by the so-called peace movement.

Isolationists notwithstanding, our necks are out around the world: in Korea, Lebanon, the Med, Europe. We are still committed in Southwest Asia, and the Persian Gulf remains a likely area for trouble. Latin America is next door and a visible danger. For those with short memories, the Nicaraguan Sandinistas were given early US encouragement as was, further back, Castro himself. Sweet reasonableness has already been tried. So, unless there are some new diplomatic techniques designed to bring off miracles, negotiation without a little military muscle available just in case is an exercise in futility, whether in Geneva or El Salvador.

The retiring Army Chief of Staff, Gen. Edward Meyer, made a melancholy observation in his valedictory interview last June. He would be opposed to sending troops anywhere again, he said, in the absence of national support. Our neoisolationists are beavering away to undermine national support. It remains to be seen how encouraging the other side finds this isolationist movement.

Having professional forces that cannot be used makes even less sense to me than the scarcity of left-handed first basemen. ■

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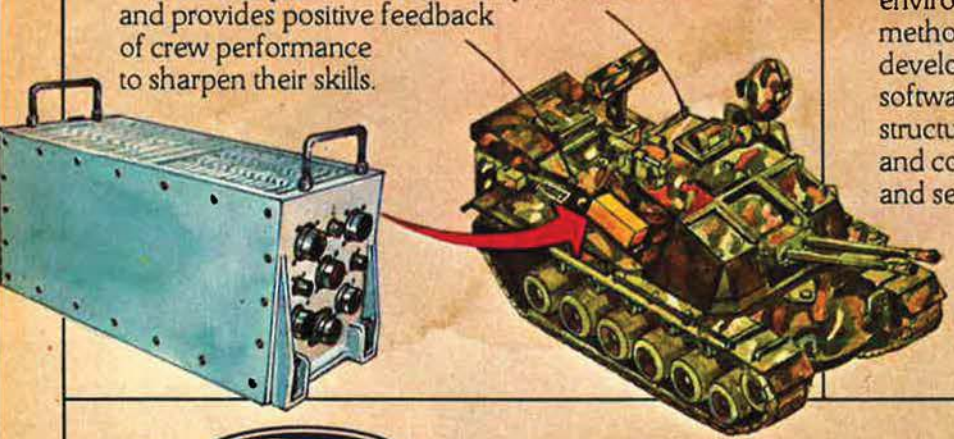

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How the Wright 'B' Was Built

This classy classic took years to build. Now it flies over the cradle of aviation.

BY WILLIAM HOLDER

THE flat country field in west-central Ohio doesn't appear at first glance to have any particular significance, but to aviation historians around the world, the area is special. Just north of Dayton, Ohio, the now-deserted acreage goes by the name of Huffman Prairie. It is also near the end of the main runway of Wright-Patterson AFB.

The "Wright" in that familiar facility's name should bring into focus some of the significance of this area. Seven decades ago, it was the site of much of the early testing by the Wright brothers of their early flying creations.

One of the planes they tested at Huffman Prairie was the so-called Wright "B" Flyer, which was several variants removed from the original and most famous Flyer. This particular model flew between 1910 and 1918.

On a cold blustery day last November, the Wright "B," or at least a dead ringer for it, flew again.

The seventy-two-year-later flight of this Wright "B" may well have taken more effort than the original.

John H. Warlick, chairman of the board of Wright "B" Flyer Inc., was at the controls of the lookalike. *(See "The Wright 'B' Flyer: A Pilot Report," p. 78, July '83 issue.)* But a whole community was behind it, pushing for its success.

In the Beginning

It all began in May 1975 when Tom Sheetz and Charles Dempsey decided that a full-scale lookalike of the Wright Flyer should be built and flown at the birthplace of aviation. Dempsey, an aeronautical engineer, urged the selection of the "B" version as the model to be copied because it had sounder aerodynamics than its predecessors.

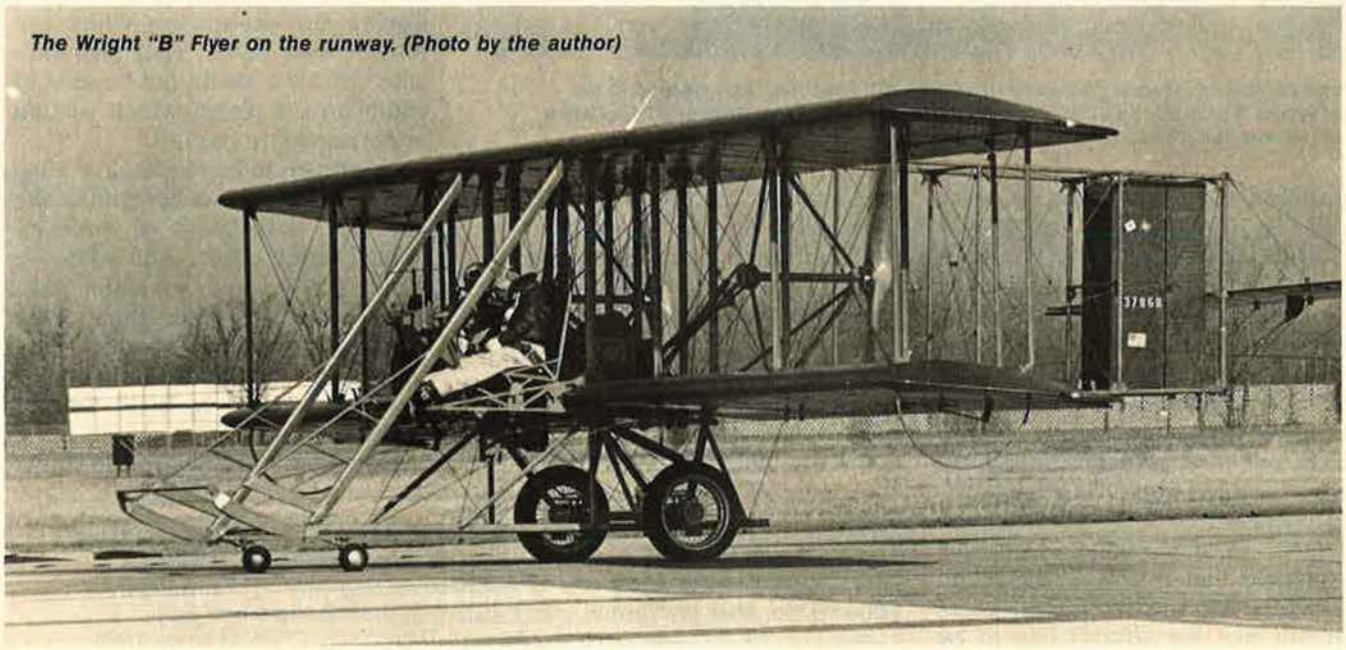
The goal had been to have the Wright "B" ready for the Bicentennial in 1976, but building it turned out to be a far bigger task than the planners had imagined. The first big need was for money to finance the project, so Wright "B" Flyer Inc., was established. This nonprofit organization, founded in 1975, qualified to receive tax-deductible contributions, and the call for help went out. Money started to come in from every state in the union, and even from more than a few foreign nations—including donations from such unlikely places as the People's Republic of China.

There were other surprises, too. Significant among them was that the lookalike Wright "B" would not be constructed of wood, as the original had been. What would the history buffs say?

Dempsey explained that there was really no way around the material substitution. The original design and material just wouldn't be able to meet an FAA regulation that states that an aircraft must be able to sustain six Gs of ultimate loading. Broken out, that figure relates to 4.5 Gs in flight and a 1.5 G safety factor. The Wrights' design was only able to handle about one-third of that figure. A wooden airplane with those loadings wouldn't have ended up looking like a Wright Flyer.

Metal Construction

"That was my decision to go with the metal construction," said Dempsey. "I decided that right off the bat. . . . It was also obvious that during the building of the plane there would be lots of volunteers, and we just had to have some kind of



The Wright "B" Flyer on the runway. (Photo by the author)

John H. Warlick, Board Chairman of Wright "B" Flyer Inc., was garbed in an authentic World War I uniform for the maiden flight of the Wright "B" lookalike last November. (Photo by John Gerhard)

standard for all of them to work with. By using the FAA Part 23 Aircraft Specification, any engineer could use it as a reference when he was doing work for us. In the long run, it worked out very well."

As a result, the modern Wright "B" Flyer lookalike was constructed from steel tubing, aluminum, and fabric, which resulted in a total weight of about 3,000 pounds, as opposed to only about 1,300 pounds for the original. Dempsey explained that it wasn't the metal structure that made the craft heavier but that the aircraft had to be designed to the six-G requirement demanded by the FAA. "Also, we had to have a much more powerful engine to fly our aircraft at the same speed as the Wrights."

Picking a Powerplant

Dempsey continued, "We used a powerplant that provided the same power-to-weight ratio as the Wright plane. That's about seventeen to one. Therefore, the plane's performance is the same as the original."

Tom Sheetz went to an Avco Corp. friend who suggested that an Avco Lycoming Division helicopter engine would fill the bill. It was a HIO-360, generating 205 horsepower. The donated engine, which definitely did fill the tough requirements of the little biwing plane, was stored for a year at the Kettering Police helicopter hangar until it was ready for installation.

Making the aircraft as authentic as possible was aided greatly by the fact that the Wright brothers' historical archives were located nearby at the university that bears their name—Wright State University. The numerous photographs that were available from the brothers' aeronautical activities were indispensable in enabling the reproduction to be as accurate as possible.

But after mulling through all the available data, it was soon realized that there was one large void facing the restorers. "We kept looking for detail drawings of the Wright 'B' and couldn't find any," said Dempsey. "Then we came across the Wrights' notes, which said that they had never made any drawings of the 'B' model. That certainly presented a real dilemma for us at the time.

"Fortunately, though, the Air Force Museum has one of the remaining 'Bs' on exhibit. We asked them if we could physically measure that aircraft. They agreed, but specified that we would have to do it during the off-season when the crowds were down. They also indicated that we would not be able to climb on the plane, which was an understandable request.

"It proved to be one heck of a big job. I think there was something like 200 total man-hours of work involved in the effort. And when we finally got finished, we had a stack of sketches and notes about three feet high. We had all the raw data, but we still didn't have the detailed drawings needed to build the aircraft," he said.

How those indispensable draw-

William G. Holder is an aerospace engineer with AFSC's Foreign Technology Division at Wright-Patterson AFB, Ohio. He attended Purdue University, graduating in 1960 with a B.S. in aeronautical engineering. He worked for Boeing Co. after graduation, participating in their Bomarc and Saturn V programs. He has been with the Foreign Technology Division since 1965.

MAGIC CARPET TO SURVIVAL

During the Second World War, radar-laid flak became a major hazard to attacking bombers, particularly over the more important targets in Germany and Occupied Europe. For their protection, B-17s and B-24s were fitted with the APT-2 Carpet Jammer, developed by Dr. Frederick Terman and his team at the Radio Research Laboratory at Harvard.

This first US airborne jammer to go into mass production could be pre-tuned to any spot frequency in the 430 to 780MHz band. It radiated 3 watts of noise over a bandwidth 6MHz wide. A few aircraft in each Bomb Group carried Carpet with their transmitters spot-tuned to frequencies used by the German Würzburg flak-control radar.

Carpet was first used in October 1943 and, as more became available, there was a progressive reduction in the accuracy and effectiveness of German radar-laid flak. More than 7,000 APT-2 Carpet jammers were built at an average unit cost of $400.

The APT-2 Carpet was the first US airborne jammer to go into mass production.

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Insist on the original

ings were acquired is another interesting community-involvement story. Dempsey related: "I had a friend in the administration of the Kettering School System who I asked whether he would consider taking on the job of doing the drawings as a school project. Fortunately for us, he was able to comply with our wishes, and the combined drawing departments from the two high schools of the district—Fairmont East and Fairmont West—produced just what we needed."

Incidentally, it might be noted that the "B" Flyer in the Air Force Museum at Wright-Patterson AFB is one of only three left in the world. Another one is in the Franklin Institute in Philadelphia, and the third is in Germany. Dempsey said that the best their records could substantiate was that only about twenty-five of the aircraft were produced.

Superb Engineering

As a part of the overall design process for the reproduction, the original Wright brothers design was carefully analyzed by volunteer engineers. It was found, at least by today's standards, to have several state-of-the-art drawbacks. However, considering the crude test equipment that was available at the time, all involved with the project agreed that the Wrights' engineering had been superb.

What was discovered about the original design was a stall characteristic in the Wrights' wing airfoil design. It was also discovered that the Wrights' tail was only about half as big as it should have been.

Even though it meant varying from the original design a bit, some 1980s' technology was incorporated into the design of the lookalike and some changes were made for safety's sake.

"We actually did a computer study on the original plane," explained Dempsey, "and what we found was that the craft just didn't have enough rudder control. We had to add about a 100 percent increase in area in the fixed vertical fin."

Finally, the Wright "B" was ready. It would be a gradual process, though, with cautious taxi tests on Wright-Patterson's main runway coming first. Each test became more and more ambitious, with the plane being allowed to jump into the air for short hops. During several of the some forty taxi tests, the plane actually took off at one end of the runway, flew the complete length of the 10,000-foot concrete ribbon, and landed on the far end.

On one of those over-the-runway flights, I was in an Air Force staff car racing beneath the tube-and-wire creation. It took the Wright "B" the better part of two minutes to cover the distance. Its vintage silhouette was in stark contrast to the C-135s parked next to the runway.

Then came the time when the craft would prove that it could accomplish a sustained flight of several minutes' duration. It was cold that November day, and the wind made it seem colder. But pilots John Warlick and William Sloan showed up in their authentic World War I uniforms and very little other cold-weather gear. This day had been long in coming, and the aviators weren't about to let a little wind chill stop them from their appointed rounds.

To the Air

It was not a highly publicized flight. Just a dozen or so observers were on hand when the pilots fired up the Lycoming powerplant. They then calmly rolled the Flyer out to the runway and took to the air. Most people have seen pictures of these early flying machines, but it's still hard to visualize how they really looked until one can be seen in flight for the first time. It is definitely what one would call an exposed perch. One local newsman wrote that the intrepid pair looked like they had left something behind when they took off.

Ivonette Wright Miller was a frequent visitor during the building of the Wright "B" lookalike. (Photo by John Gerhard)

The flight was picture perfect, with the flight plan for the trip taking the Flyer over old Huffman Prairie. It had been more than seventy-two years since the last "B" bird had soared there, and that time, Orville Wright had been at the controls.

The flight showed that most of the calculations had been correct concerning the structure and powerplant. The performance of the lookalike craft parallels that of the original closely, with a takeoff speed of slightly more than forty-seven miles per hour. Cruise velocity is sixty miles per hour for the forty-foot wingspan aircraft.

That initial sustained flight lasted four minutes and fifty-two seconds, and covered about seven miles around the perimeter of the base. It soon became old stuff taking the craft up, and many hours were logged in the Dayton-area skies.

The Wright "B" received its FAA certification on July 13, 1983.

During the course of its construction, many famous people have dropped in to see the work. Some who have sat in the new-old craft are Sen. Barry Goldwater, Jimmy Doolittle, Frank Borman, T. Claude Ryan (who built *The Spirit of St. Louis*), Air Force Secretary Verne Orr, World War II and Korean War ace Francis S. Gabreski, actor Jimmy Stewart, and Air Force Lt. Gen. Lawrence A. Skantze.

There has also been another frequent visitor during construction and flight testing, a dignitary with more than passing interest in the project. Her name is Ivonette Wright Miller, and she is a niece of Orville Wright. On August 29, 1911, as a fifteen-year-old teenager, she took a ride with Uncle Orville on a "B" Flyer. She still remembers that day very clearly. Mrs. Miller and her husband, World War I pilot Harold Miller, are co-executors of the Orville Wright estate. ■

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Defense Systems Division in the past.

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Defense Systems Division in the present.

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Sperry has become a recognized leader in providing MIL-STD-1750 hardware using DSD's Reconfigurable Modular Family of standardized modules. The system used in the Wild Weasel program will be the first production processor incorporating 1750A architecture. Sperry is also involved in updated versions of the PC-3 and S3A programs.

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The next generation of computers as embodied in the Navy Embedded Computer System is already technologically at hand with Sperry's AN/UYK-43 and AN/UYK-44 systems design. We were selected initially as one of two development contractors on both programs. Several months ago, Sperry DSD was selected as the winner of the AN/UYK-44 production phase of the program. And most recently, DSD was selected to provide AN/UYK-43 production sytstems.

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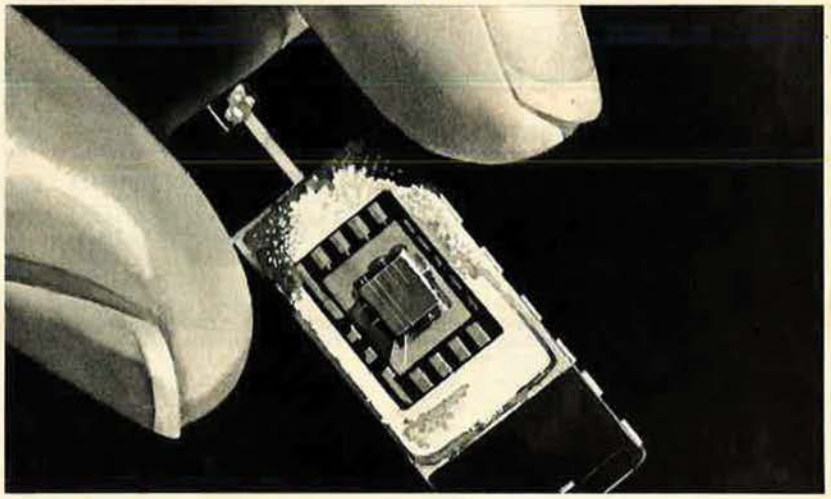
So whether it's Sperry Univac or Sperry, we intend to be "On Time, On Target" with advanced high technology products, today, and in the future.



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BOEING

THE GHQ AIR FORCE

BY JOHN L. FRISBEE

In its short life, the Air Corps's GHQ Air Force broke the pattern of fragmented airpower and fostered the development of a centrally controlled, offensive force that was to be decisive in World War II.

AMERICAN military aviation traveled a long road from its first use in combat during World War I to establishment of the US Air Force in 1947. About midway in that journey stood a major milestone—creation of the GHQ Air Force on March 1, 1935. Its roots, and the controversy that surrounded its creation, go back to the closing months of the First World War.

When the guns of August sounded in 1914, none of the European combatants had airplanes that were designed for military use. Their aircraft were unarmed, had a top speed of about sixty-five miles an hour, and at first were used only for observing enemy troop movements. Four years later, both the Allies and the Central Powers had thousands of armed pursuit, bomber, attack, and observation aircraft. The speed of pursuits had increased to 130 miles an hour, and multiengine bombers with a wingspan of 100 feet or more had been developed by the British, French, Italians, Germans, and Russians.

Army generals on both sides soon learned that control of the air had become a vital element of warfare. However, their view of airpower was primarily defensive, limited to the battlefield and its immediate rear areas. They considered aviation an auxiliary of the ground forces, to be controlled at division, corps, or field army level.

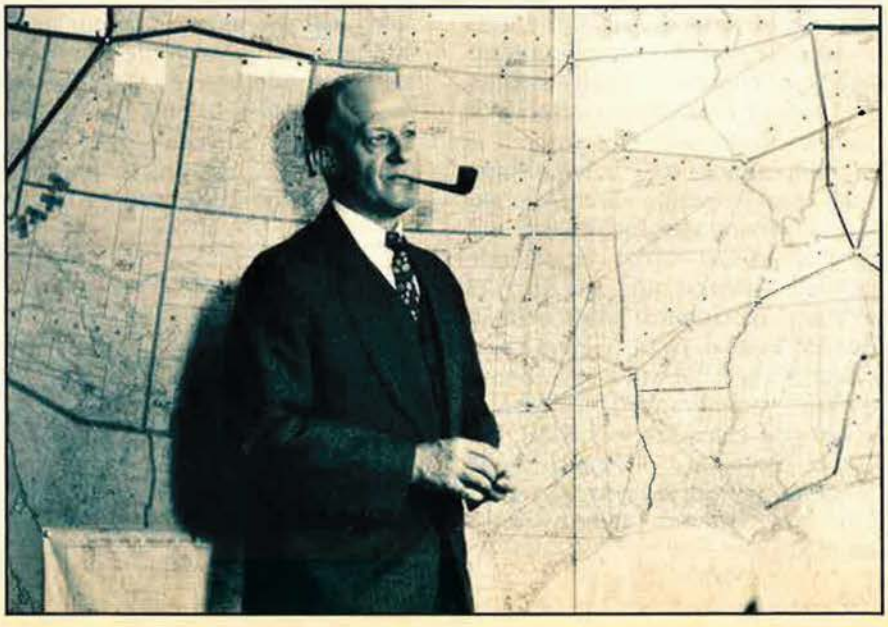
On the other hand, many airmen concluded that the mobility and flexibility of the airplane could be exploited fully only if airpower were centrally controlled by an airman who was responsible to the commander of all ground forces. The effectiveness of that idea was demonstrated in both the St.-Mihiel and Meuse-Argonne offensives of September and October 1918. In the former, Brig. Gen. "Billy" Mitchell was in at least nominal command of 1,500 Allied aircraft. Part of the force was used in direct support of ground troops, while the remainder—a General Headquarters reserve—bombed and strafed concentrations of reserves, supplies, and transportation to the rear of the battle area.

Mitchell and some other American airmen, while not denying the tactical usefulness of aviation in its battlefield role, shared with British Maj. Gen. Hugh Trenchard and Italian Col. Giulio Douhet a belief that the most important function of aviation was offense, rather than defense. They thought that bombing enemy airfields, transportation nets, and war-supporting industry could destroy the ability and will of the enemy to continue fighting. In May 1918, the British established an Independent Air Force under Trenchard to test the offensive use of long-range "strategic" bombing, but the IAF never had enough bombers to carry out a sustained campaign. The effectiveness of strategic bombardment was to remain a subject of spirited argument until the latter part of World War II.

The Stage Is Set

Differing views on the organization and use of airpower held by ground and air officers set the stage for two decades of postwar controversy in the United States. The Air Service remained part of the Army, controlled by the War Department General Staff, which continued to regard its air arm as an auxiliary of the ground forces. The aviators themselves did not agree on the best way of achieving their objectives of centralized control under an airman and recognition of an independent strategic bombardment mission in addition to direct support of the ground forces.

The more radical airmen, led by Billy Mitchell and Benjamin D. Foulois, who had learned to fly with the Wright brothers and who was to



Feisty Maj. Gen. Benjamin Foulois, Chief of the Air Corps from 1931 through 1935, fought valiantly but seldom diplomatically for an independent air force. He was willing to accept the GHQ Air Force as a temporary expedient.

The Martin B-10 was the first modern bomber, with enclosed cockpit and retractable landing gear. It was nearly as fast as pursuits of its day, but was too small for the long-range offensive missions Air Corps strategists foresaw.

become Chief of the Air Corps in 1931, fought for a separate air force, coequal to the Army and Navy. Patrician Mitchell and high-school dropout Foulois (who had earned a battlefield commission in the Philippines in 1901) agreed on little else.

The more conservative airmen favored a position of semiautonomy within the Army. One of the early champions of that approach was Maj. Gen. Mason Patrick, a West Point classmate of Gen. John J. Pershing and Pershing's Chief of the Air Service, AEF, during the war. Patrick became an enthusiastic supporter of airpower, served as Chief of the Air Service (after July 2, 1926, the Air Corps) from 1921 to 1927, and earned pilot's wings while in his sixties.

General Patrick agreed that all combat aircraft should be centrally controlled by an Air Service officer. He recommended that Army aviation be divided into two mission categories: "support," or observation, that would be assigned directly to ground units; and "air force," or pursuit, attack, and bombardment that would operate directly under Army General Headquarters in support of ground forces, or on independent strategic missions. In 1923, a board of General Staff officers headed by Maj. Gen. William Lassiter endorsed Patrick's recommendations, including establishment of a General Headquarters (GHQ) air force. Secretary of War John W. Weeks approved the Board's report, but no action was taken to implement it.

The idea of a dual-mission air force did not die with the Lassiter Board report. Between the early 1920s and 1934, fifteen boards and committees studied the question of how best to organize and control Army aviation. Most of them favored creating a GHQ air force, *but only in time of war.* In fact, the General Staff enshrined that principle in Army Regulation 95-10 of March 1928, but there were no more than occasional faint stirrings in that direction.

The Back Door to Autonomy

In the 1920s, the climate in this country was not conducive to establishing a new military service that believed its most important function to be offensive in nature. The United States was moving rapidly toward isolationism, the world was at peace with no enemy on the horizon, and the purpose of our small military and naval forces was seen as strictly defensive. Military men were forbidden to plan for, or even to discuss, offensive operations. Beyond that, American bombing planes of the 1920s and early '30s were of such short range and limited bomb-carrying capacity that a decisive bombing campaign against targets far behind enemy lines appeared to be technically infeasible.

Under these circumstances, airmen had to base their claim to an independent mission on coastal defense of the United States and its possessions. Some of the more farsighted saw this as no more than a way station en route to a long-range, offensive strategic bomber force that would deter war, or win if deterrence failed. It was to demonstrate the effectiveness of Army bombers in a defensive role that Billy Mitchell's 1st Provisional Brigade sank the "unsinkable" ex-German battleship *Ostfriesland* off the Virginia coast in July 1921.

The Navy regarded that event as an infringement on its time-honored mission, and perhaps as the start of a move to consolidate all military and naval aviation under Army command. It was not until 1933 that Maj. Gen. Douglas MacArthur, Army Chief of Staff and a strong supporter of airpower, negotiated an agreement with Chief of Naval Operations Rear Adm. William Pratt giving the Army's air arm responsibility for the air element of coastal defense. That agreement was loosely worded and honored by the Navy more in the breach than in the observance. Nevertheless, the MacArthur-Pratt agreement was a step toward creation of the GHQ Air Force.

With the coastal defense mission, Chief of the Air Corps Maj. Gen. Benny Foulois now had firmer ground for pursuit of his primary goal—a separate air force—or his fall-back position—establishment of a GHQ air force *in peacetime.* General MacArthur was in the process of reorganizing the Army to improve its combat readiness and

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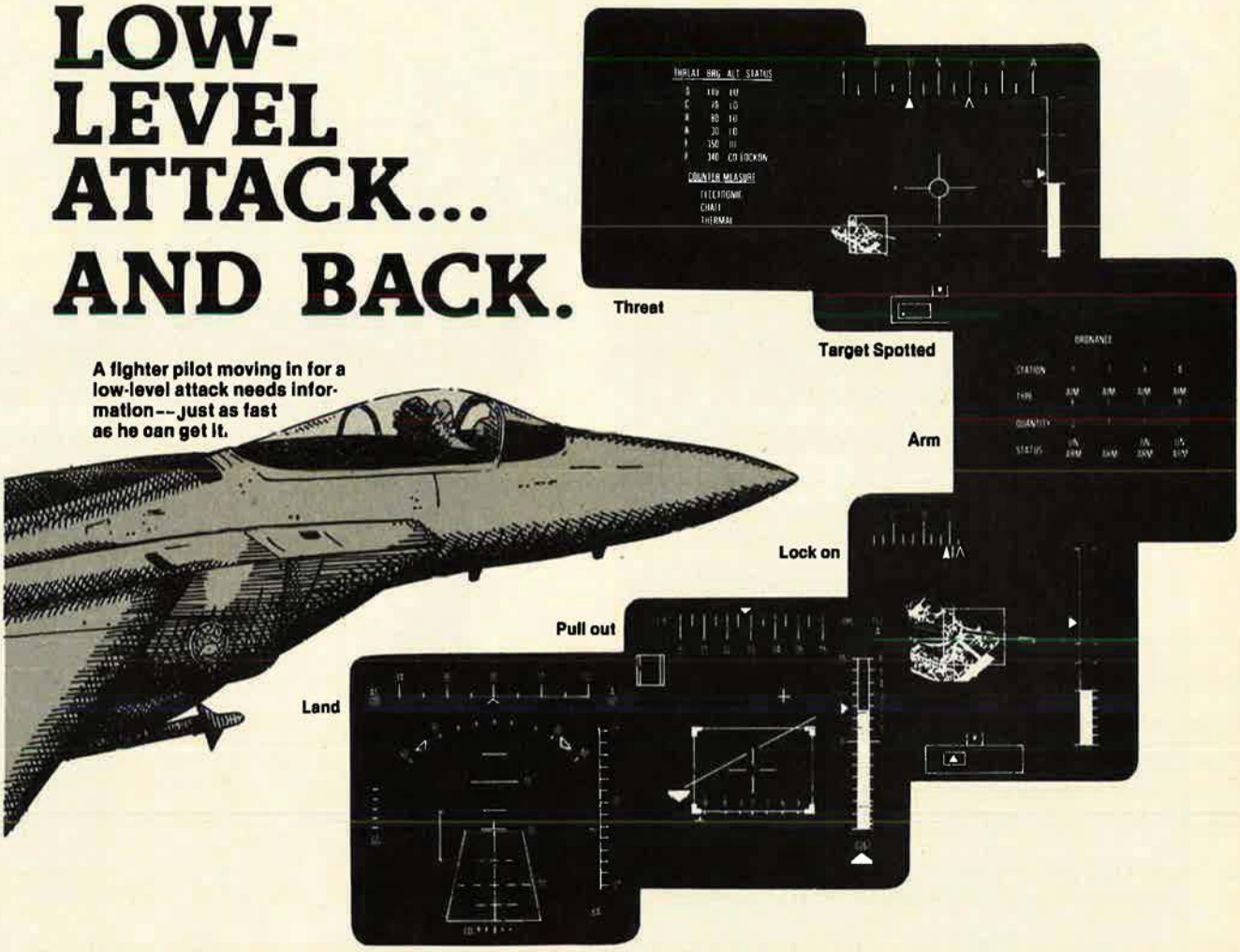
John L. Frisbee was on the staff of AIR FORCE *Magazine from December 1969 until his retirement in June 1980. During a distinguished Air Force career, he served as fighter and bomber pilot, planner on the Air Staff and at major commands, and as a teacher and leader of young men at West Point and the US Air Force Academy. He was speechwriter, soundingboard, and mentor for a series of senior uniformed and civilian Air Force leaders while special assistant to the Secretary of the Air Force. He holds bachelor's degrees in economics and Latin American studies, a master's in international relations, and is a graduate of the Armed Forces Staff College and Canadian National Defence College. He is now a regular contributor to* AIR FORCE *Magazine's "Valor" series.*

LOW-LEVEL ATTACK... AND BACK.



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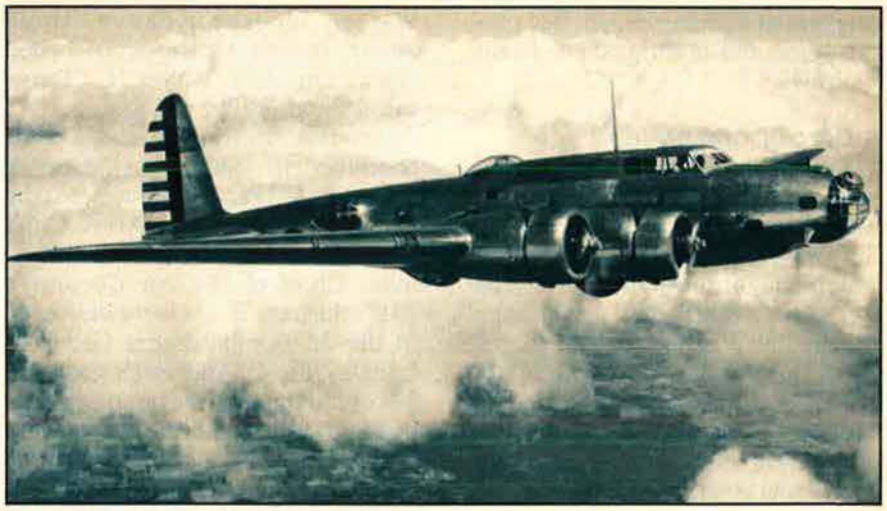
accelerate emergency mobilization. It was obvious that the Air Corps and the Navy should not have to reorganize during a crisis or base their plans on mobilization, but had to be ready immediately to repulse an attack on US territory. Benny Foulois now could argue with simple logic that the Air Corps should be so organized and controlled that it could train as it would fight.

Realistic Air Corps training, hence combat readiness, was impossible under existing conditions. Combat planes were parceled out to the Army's nine corps area commanders with no regard for proper deployment. While the Chief of the Air Corps was responsible for training air units, he had no authority to see that corps area commanders complied with his directives. Each of them trained his assigned air units as he saw fit, which generally meant direct support of ground troops. This flew in the face of the Air Corps's belief in centrally controlled offensive operations.

Gathering Momentum

In the early 1930s, another development took place that, at least in the eyes of many airmen, added doctrinal support to their arguments for greater independence. Faculty members at the Air Corps Tactical School, Maxwell Field, Ala., developed a comprehensive doctrine of strategic air warfare, based on analysis of an enemy's economic and social structure. They believed that by destroying relatively few key targets—electric power systems, oil refineries, transportation chokepoints, aircraft engine factories, magnesium and aluminum plants—an opponent could be defeated, or at least fatally weakened, by airpower alone. Senior ground officers didn't accept the decisiveness of strategic bombing, but a few of them, including MacArthur, agreed that it would materially aid the ground forces in winning a war.

Frank Andrews was the first commander of GHQ Air Force, the first airman to hold a senior position on the War Department General Staff, and the first to head a joint command (the Caribbean Defense Command). In February 1943, he was appointed commander of the European Theater of Operations. Three months later he was killed in an aircraft accident.



The first B-17s were delivered to GHQAF's 2d Bombardment Group at Langley Field in March 1937. A year later, the Air Corps was directed to buy no B-17s beyond the forty that were on order.

At about the same time, Air Corps engineers at Wright Field's Air Materiel Division concluded that a long-range four-engine bomber was technically and economically feasible. A design competition of 1931 already had produced the Martin B-10, the first modern bomber, and the B-17 would make its initial flight in 1935. Norden and Sperry bombsights promised the bombing accuracy that was necessary to destroy the small targets envisioned by Tactical School strategists.

Convergence of these developments—the Air Corps's coastal defense mission, growing acceptance of the potential of offensive strategic bombardment, and technical advances in aircraft—helped persuade the Drum Board, headed by Army Deputy Chief of Staff Maj. Gen. Hugh Drum, to endorse establishing a GHQ air force in peacetime. The Board's recommendations were approved by Chief of Staff MacArthur in October 1933, but foot-dragging continued. Many General Staff officers suspected that setting up a GHQ air force would only encourage the Air Corps to concentrate on strategic bombardment at the expense of supporting the ground forces.

Then, in February 1934, the GHQ air force issue was pushed into the background when President Roosevelt canceled airmail contracts with the airlines and directed the Air Corps to carry the mail. The Air Corps's dismal early performance improved during the period to June 1, when new contracts with the airlines became effective. Nevertheless, it seemed clear that the Army's air arm was neither trained nor equipped for all-weather operations in peace or in war.

Secretary of War George Dern appointed still another board, this one chaired by former Secretary of War Newton Baker, to examine Air Corps deficiencies. The Baker Board recommended immediate establishment of a GHQ air force as a corrective measure and to counter a renewed drive for a completely separate air force that was gaining some support on Capitol Hill. The War Department and the General Staff accepted the Board's recommendations, and, on March 1, 1935, the GHQ Air Force opened its head-

quarters at Langley Field, Va., under command of Brig. Gen. Frank Andrews.

A Crucial Compromise

The new air force was a compromise between those airmen who wanted complete independence and the War Department General Staff, which sought to retain overall control of what it regarded as an essential auxiliary of the ground forces. Lest the Air Corps become too powerful, authority was divided between its Chief and the commander of the GHQ Air Force. General Andrews was given command of all Air Corps combat units in the United States except those observation units that were assigned to ground commanders. He was responsible for training his forces, reporting to the Army Chief of Staff (not to the Chief of the Air Corps) in peacetime, and to the theater commander in time of war. The Chief of the Air Corps was responsible only for supply, procurement, and developing doctrine. As long as this division of responsibility and authority lasted, it generated internal friction in the Air Corps.

To confuse command relationships further, Army corps area commanders kept control of air installations in their areas and were responsible for housekeeping, administration, and courts-martial. The Air Corps did not get a separate budget, as it had hoped, so the General Staff could continue to decide what kinds of aircraft would be bought, and how many.

The GHQ Air Force was organized in three wings: the 1st, commanded by Brig. Gen. Henry H. "Hap" Arnold, with headquarters at March Field, Calif.; the 2d, under Brig. Gen. H. Conger Pratt, headquartered at Langley Field; and the 3d, headed by Col. Gerald Brant at Barksdale Field, La. General Andrews found himself with fewer than half the 980 combat aircraft recommended by the Drum Board, and only twenty percent of them could be considered modern. He had about 600 pilots, compared to the Drum Board's recommendation of 1,245. But Andrews did have a competent, though small, staff that included a number of men who would emerge as major figures in World War II: George Kenney, Hugh Knerr, Joseph McNarney, Elwood "Pete" Quesada, Walter H. "Tony" Frank, and Walter Weaver.

General Andrews and his staff continued to lead the Air Corps's fight for B-17s, sometimes to the embarrassment of the Army Chief of Staff and Maj. Gen. Oscar Westover, Chief of the Air Corps. In 1937, thirteen B-17s were delivered to the 2d Bombardment Group at Langley Field. Andrews's goal was 244 of the four-engine bombers, but, in May 1938, while the Fiscal Year 1940 budget was being prepared, the Air Corps was directed to request no more than the forty B-17s already on order. A still defensive-minded General Staff preferred the much cheaper B-18, a converted airliner of short range and limited bomb load that was regarded as adequate for coastal defense. Also, the country was in the midst of a depression, and ground forces, too, were short of equipment. Andrews's persistence on the B-17 issue probably cost him appointment as Chief of the Air Corps when General Westover was killed in a crash in September 1938.

Toward Independence

Despite its shortcomings, the GHQ Air Force did gain for the Air Corps some of its cherished goals: centralized command of air combat units by an experienced airman; the ability to train realistically, free from the whims of corps area commanders; and at least tacit recognition of an independent air mission that demanded long-range bombers. The GHQ staff was willing and able to push for technical developments needed in strategic air warfare and to devise tactics and techniques to implement doctrine that had been developed at the Tactical School.

Some of the fears of ground officers were realized, however. Tactical aviation lagged, and that had to be corrected in North Africa during the early months of US participation in World War II.

The GHQ Air Force compromise temporarily stilled the advocates of a separate air force while the Air Corps gave the new organization an honest trial. It soon became apparent to airmen that the potential of airpower could not be realized under General Staff control, however. As the war clouds gathered over Europe and Asia, there began a gradual move toward tacit, if not legal, independence. In 1939, General Andrews completed his tour as GHQ Air Force commander and was replaced by Maj. Gen. Delos Emmons. (Andrews's unremitting fight for strategic airpower earned him a reduction to the rank of colonel and temporary banishment to Fort Sam Houston, Tex., as District Air Officer.) GHQ Air Force was redesignated as the Air Combat Command, reporting to Maj. Gen. Hap Arnold, who had become Chief of the Air Corps in 1938, rather than to the Army Chief of Staff.

In July 1939, George C. Marshall, an airpower convert, became Acting Chief of Staff of the Army and, two months later, its Chief. He immediately started bringing airmen, Frank Andrews being the first, into key positions on the General Staff. In November 1940, Marshall made General Arnold Deputy Chief of Staff for Air in addition to his position as Chief of the Air Corps, and authorized him to direct both the Air Corps and its Air Combat Command. With Marshall's support, the Air Corps became the Army Air Forces on June 20, 1941—a largely autonomous air arm within the War Department. Nine months later, the AAF was reorganized, the Air Combat Command dissolved, and the last vestiges of divided authority disappeared. The AAF now was coequal with the Army Ground Forces and the Army Services Forces.

The Air Corps's GHQ Air Force had broken the pattern of a fragmented, randomly trained organization, cast in the mold of a ground force auxiliary. It gave the Army's airmen time to organize and train for the concentrated, offensive use of airpower, particularly strategic airpower, that was to be decisive in World War II. The command's many demonstrations of the wartime potential of long-range aviation helped rally public and governmental support for an expansion of military aviation. In these ways, the GHQ Air Force was a major link in the evolution of air warfare and an important step in preparing the United States for the global conflict that lay just over the horizon. ■

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This evolution continues with the AN/APG-68 radar for the F-16 C&D, and the AN/APQ-164 advanced offensive radar for the B-1B bomber.

The modular design concept has saved DoD an estimated $400 million in development costs alone by using APG-66 derivates rather than all-new unproven designs. It also cuts the complexity and cost of support systems, and anticipates future mission requirements. No other electronic sensor system is as adaptable, available and affordable.

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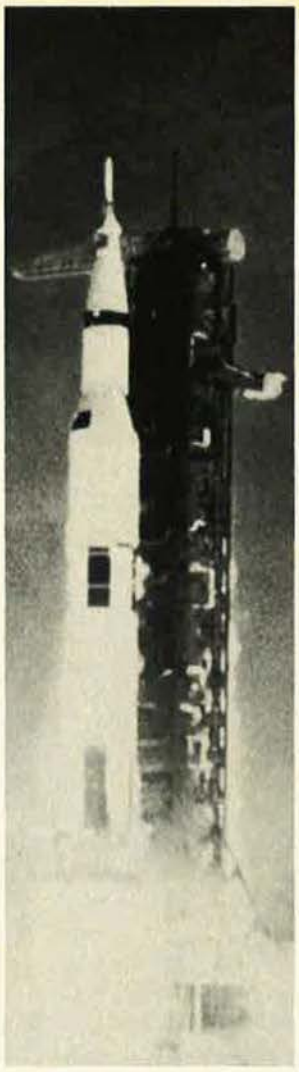

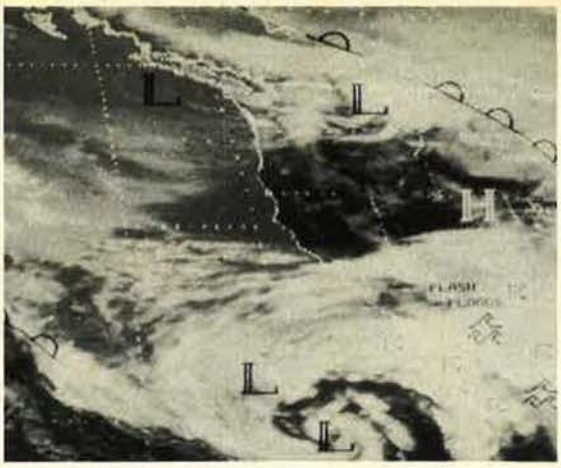

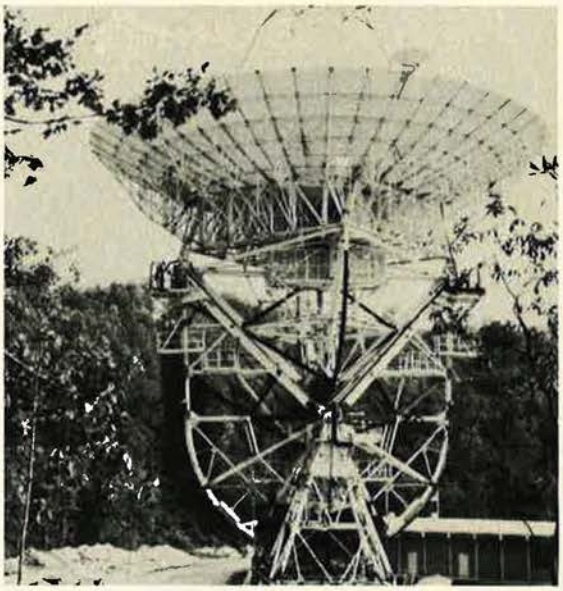

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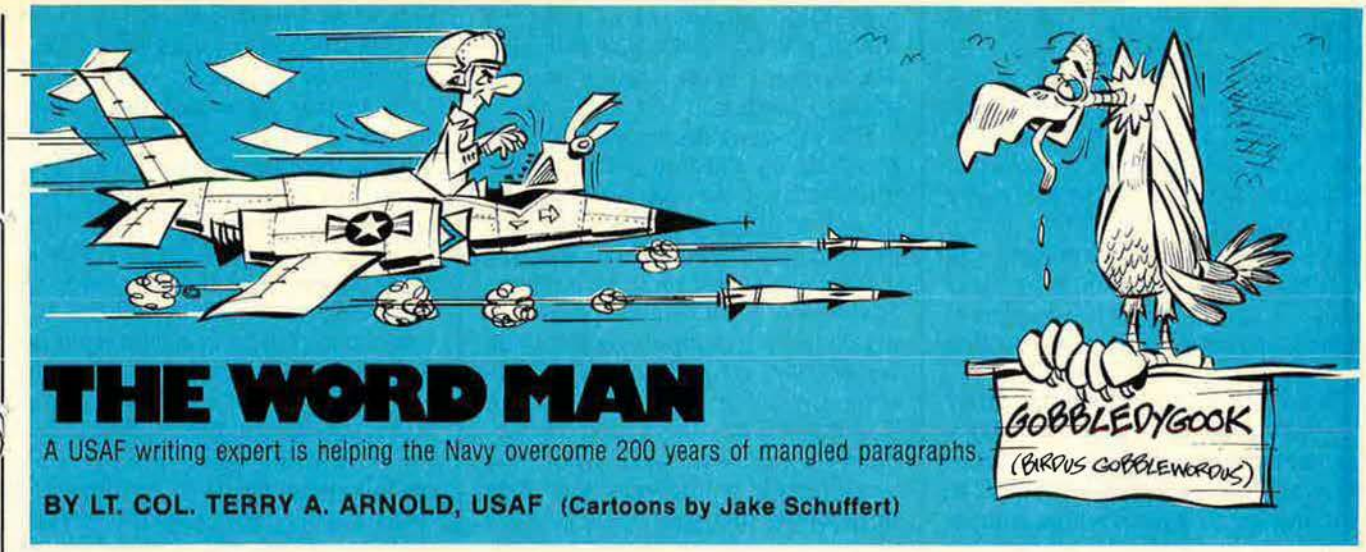

THE WORD MAN

A USAF writing expert is helping the Navy overcome 200 years of mangled paragraphs.

BY LT. COL. TERRY A. ARNOLD, USAF (Cartoons by Jake Schuffert)

EVEN before the Air Force traded its pinks and greens for aerospace blue, its mission had been to fly, fight, and—yes—write. This often rambunctious youngest member of the military services, unlike its grown-up brothers in uniform, had always dared to fly head-on at full throttle into the face of such awesome obstacles as poor writing. The Air Force, you see, has always linked much of its mission success to the quality of its written word. In writing, as in combat, the Air Force would "live in fame or go down in flame."

The Air Force has displayed its commitment to writing excellence by conducting a variety of programs over the years. In the early 1950s, there was the administrative manual, *Guide for Air Force Writing*, followed by a myriad of instructional films and slide shows, followed then by programs where local English teachers visited bases to encourage managers and staffers alike to root out "gobbledygook." Today, there are videotapes on effective writing and the professional military education students' bible for state-of-the-art writing and speaking, *Tongue and Quill*.

But there is still another attempt to make better Air Force writers, and it has been successful for more than seven years. It's called the Air Force Academy Executive Writing Course.

Executive Writing Course

Taught by traveling teams of English instructors from the Academy, this one-day program is popularizing better writing throughout the military. From the beaches of Hawaii to the plains of Spain to the mountains of Italy ("It's a tough, sweaty job," says its professor), military people are learning from the Air Force to perfect their own way of "fighting and writing."

The Navy, along with the Air Force, has had no doubts about the effectiveness of the Academy's clear-writing program. After senior Navy officials previewed the presentation several years ago at the Pentagon, they persuaded the Vice Chief of Naval Operations to adopt the course's principles as rules for Navy writers to live by. They also wanted the course's instructor, Air Force Lt. Col. Tom Murawski, tenured English professor at the Air Force Academy and one of the government's few (if not only) full-time writing experts, on board to help them do it. For the past two years he has been officially on loan to the Navy, presenting his course and rewriting their correspondence manual in an attempt to overcome more than 200 years of traditionally bad writing. He has been dazzling audiences anywhere and everywhere whose commanders have been willing to spend the few bucks necessary to pay the expenses.

Murawski's course doesn't teach proper grammar, verb tenses, or such things as adverbial clauses. His mission, instead, is to help writers develop a writing style that promotes rapid reader understanding. When the bespectacled professor speaks, everyone stops to listen as if he were the E. F. Hutton of the written word.

"When did you last split an infinitive or dangle a participle in a public place?" he chastises his audience, sounding like an itinerant preacher scolding his congregation at a Sunday night tent meeting. And what does he say about "starchy" writing, the kind of writing that sticks to the roof of your mouth?

"Let it die!" he exclaims, answering his own question. "Cut it off at the knees! Relax," he counsels, "and your writing will be more readable. Make it compact, natural, and to the point. Write as though speaking," he demands.

AIR FORCE Magazine caught up with Murawski at the Bethesda Naval Medical Center, where he was lecturing a group of Navy auditors from the metropolitan Washington area. Other visitors over the years to his tent-meeting revivals have included representatives from all of the military services, other federal departments, and even the White House staff.

Punctuating the air with his hands for emphasis, the professor dressed in blue settles eventually to center stage for the practicalities of his course. He flashes viewgraphs of the most horrible examples of government correspondence, some originated by the group being addressed. Most of the examples are so hilarious that they double over the crowd in convulsive laughter. Some, though, aren't funny at all, because no one has any idea of what the writer was trying to say.

Four Principles

To combat this "obscenity," Murawski stresses four principles: compact writing, natural writing,

to-the-point writing, and active writing.

"Suspect wordiness in everything you write," says Murawski in the Navy's *Just Plain English,* a pamphlet he developed recently. "Quarrel with the need for every paragraph, every sentence, every word. The longer you take to say things, the more you blur your ideas." Murawski advises that if deadlines permit, let your writing rest for a day. "Then, rewrite it!"

Natural writing can be attained by writing more like speaking. "Begin by imagining your reader is in front of you," he instructs. "If you're writing to many different people and none in particular, picture one typical reader. Then write with the techniques of speaking, such as personal pronouns, short sentences, and everyday words. If you wouldn't say it in person, don't say it by mail. Take time to revise. Work to help the many who must read your writing. If you don't sweat," he says, "your readers will."

Letting your readers know right at the start what you are talking about is what Murawski calls to-the-point writing. "Much writing follows a pattern of organization that is easy on writers but hard on readers. Most of us write the way we think, by leading up to our conclusions," explains Colonel Murawski. "From a reader's perspective, it is the clue-by-clue pattern of a mystery story. A more helpful pattern is that of newspaper articles, which open with the most important information and taper off to the least important."

The final form of effective writing advocated by Colonel Murawski is to write actively. Put the doer before the verb. "The pilot landed the aircraft" is active. "The aircraft was landed by the pilot" is passive.

During his lecture, Murawski uses his audience to help him to hack, chop, slash, and reduce wordy letters to ones that often communicate in twenty-five words or less. He literally reduces these examples of military verbosity to understandable size. And he does it with as much style as missionary zeal. His goal is as simple as the statements that result—promote government efficiency, personal productivity, and individual careers. He carries out his task by preaching the gospel of what he calls the "Church of Clear Writing." The deacons of his church are top military leaders.

Effective communication is taken seriously by those at the top echelons because writing and reading others' writing are perhaps the most important activities of the working day for the senior military member. No person, even someone performing or directly supporting the combat mission, is free from the burdensome task of putting pen to paper. There will always be a need for people who can write well. And these same people will always need help in reaching that goal.

"The tide of ignorance is ever rising, so we must have new programs," Murawski explains. His approach has been to use the Academy's Executive Writing Course. This program was adapted to become the Navy's *Just Plain English* program and has directly or indirectly helped nearly a million officers, NCOs, and civilian managers to write better letters and to improve the writing of subordinates. But the best thing about this program is not the total number of people who have been helped, but who most of these people are.

"Here's the article you asked me to write for the daily bulletin on energy conservation, sir!"

From the Top Down

"This program works from the top down," explains Murawski. "We're talking about the trendsetters, the people who do the significant writing and reviewing." The more top officials who adopt the messages presented in the "sermons" and make them a part of their organization's policies, the more effective communication will be.

Murawski once said that what he was really trying to do was to "popularize the idea of clear writing and to overcome our No. 1 obstacle—the fiction that there's somebody upstairs who insists on an obsolete, formal style." He doesn't believe that his efforts will instantly turn starchy and long-winded writers into elegant, polished ones, or that the bureaucracy will become populated with wordsmiths overnight. Two major obstacles prevent that from happening: individual habit and bureaucratic inertia.

Murawski, writing about his course, has said that since writing is so personal and painful, many people keep old writing habits even if they are inefficient ones. "Writing improvement becomes especially hard when you add to individual habit the pressures against change in a large organization. Old heads train new ones, old letters make convenient models, and old ways seem the safest ways. And so," he continues, "many people continue to write in a style that would get a lot of laughs if it didn't do so much damage.

"Overcoming individual habit and bureaucratic inertia takes initiative. Don't wait for the next guy. If you're a writer, start using the advice of this course. If you're a reviewer, start letting people know that you welcome modern writing."

Murawski feels, however, that he, better than most people, has a sense of the limits of his program. "I can only do so much," he admits. "The evidence is clear, though, that we do improve attitudes and that people are willing to work harder at better writing." He says that he has heard from so many people who speak of learning from his program that it must have some effect.

The Navy's attitude has been changed, and he says he has found people surprisingly receptive to his call for change. Perhaps the key is

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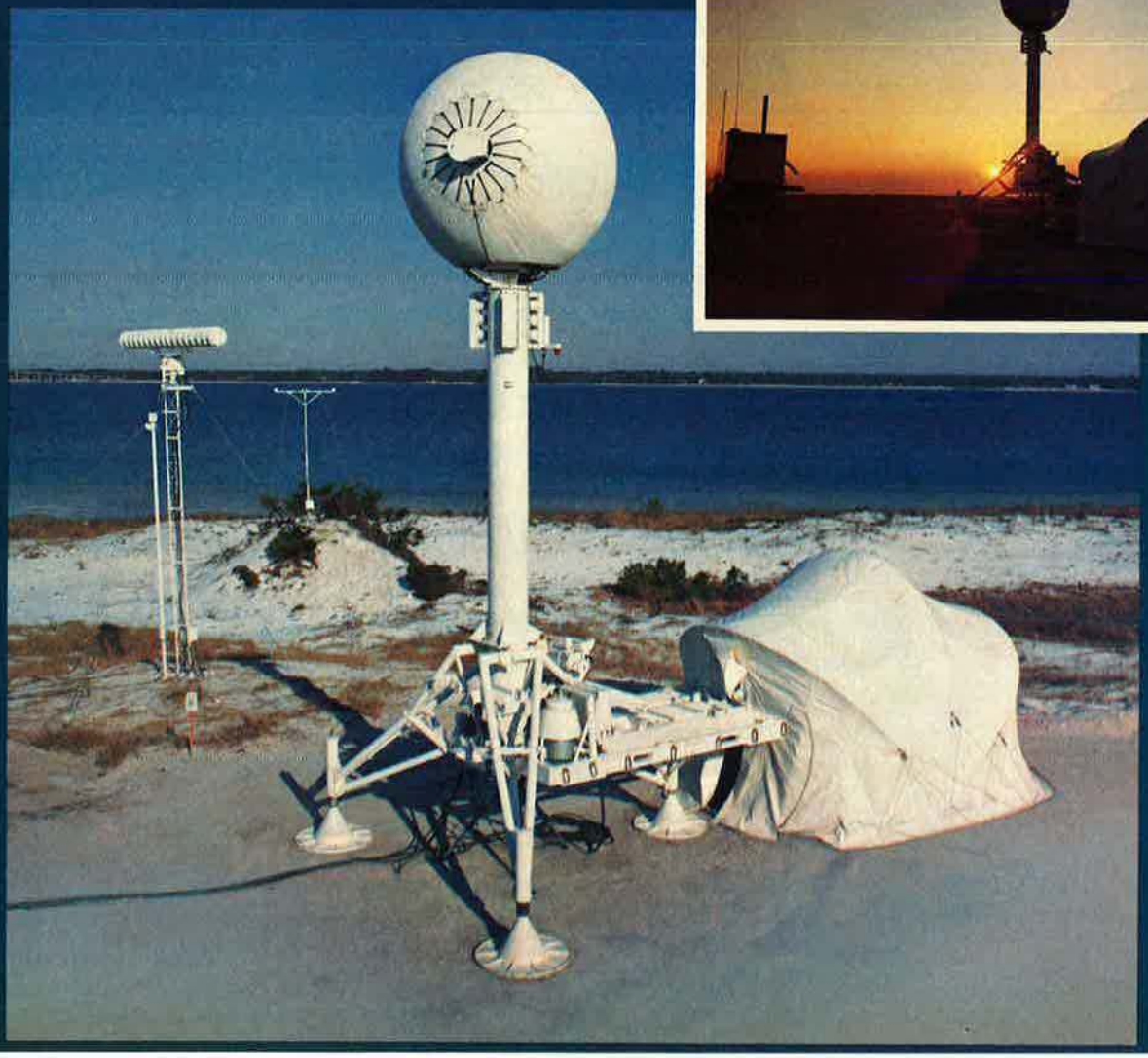

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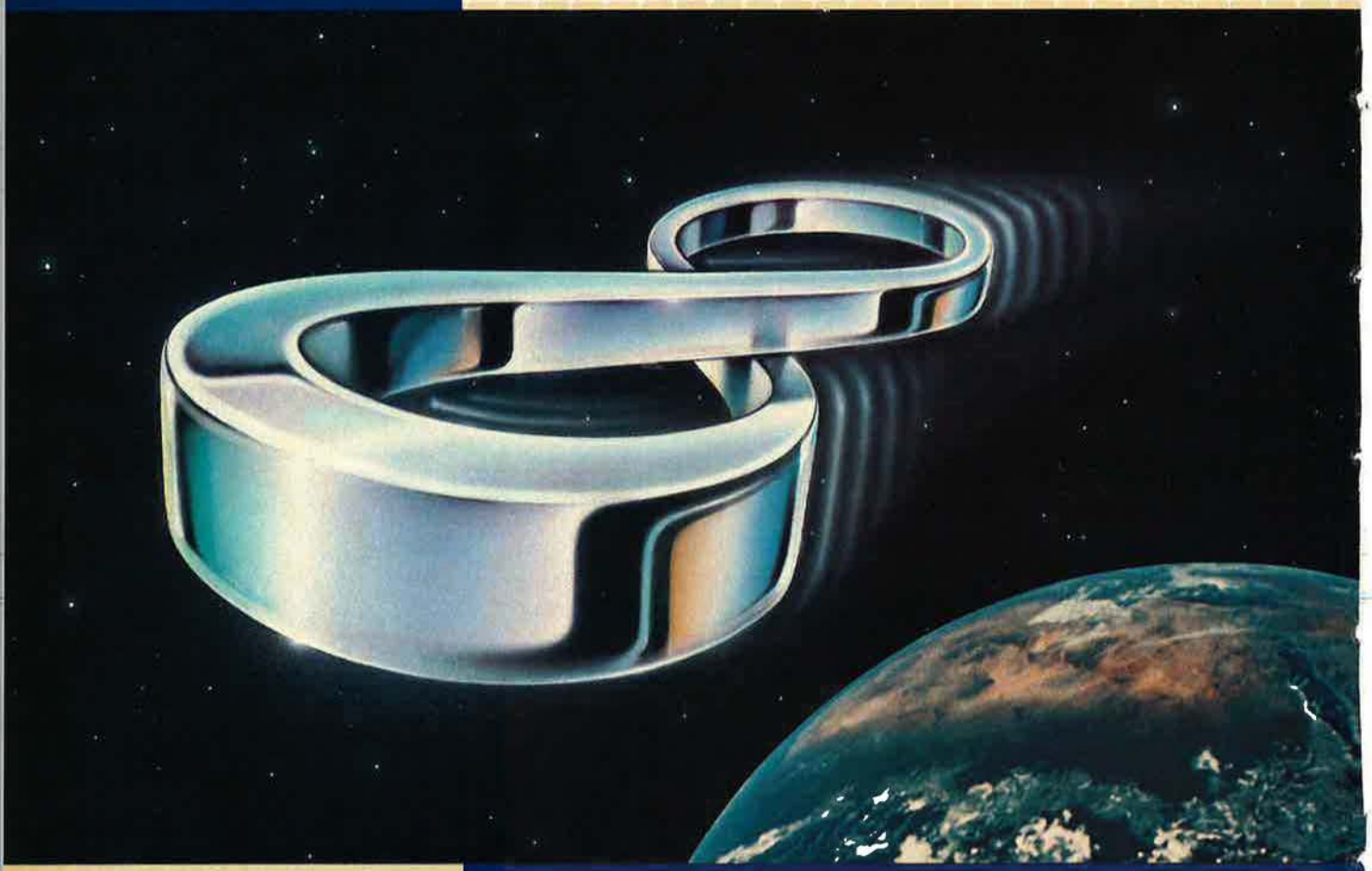

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that the Navy started off its program by placing the program's catalyst, Murawski, at the very top level of the service's management structure—he is the advisor on writing improvement to the Assistant Vice Chief of Naval Operations. From that crow's-nest position, he has been able to move into unit levels not by coercion but by invitation. But mere invitations don't get all top leaders interested.

"I meet a great many senior commanders around the military, and find that most are skilled writers. At the same time," he continues, "I find all too few of them who make better writing a priority with their staffs. I encourage senior people to 'come out of the closet' on the subject of writing. If they have stars on their shoulders, they probably know how to write."

Say It in Writing

He says that most senior commanders know they want to do something about improving writing, but don't know what to do. His answer is to encourage commanders to say something about writing, preferably *in writing*. A good place to start is the letter of philosophy that most new commanders use to educate their new staff to his methods of operating.

He recommends that leaders send around "before" and "after" samples of correspondence. He even recommends that his effective writing pamphlet be attached as a supplement to a unit's correspondence manual. "But above all," he emphasizes, "commanders should give the subject some attention. Senior people are the victims of bad writing. Their days are spent by their writing or reacting to others' writing. Too many of them are just too quiet about it," he laments.

Murawski surmises that they don't squawk because they misinterpret the direction society appears to be heading. "We hear too much talk about ours being an oral society that is drifting away from writing. Don't be fooled," he cautions. "Even if the day comes when we can talk to our typewriters—when we don't have to type in the traditional way—we will still need to organize our ideas. We will still need to defend propositions persuasively. The people who can do that are going to get ahead and are going to have the power," he points out.

"Military writers corral an idea and circle it to find out what they really think," he continues. "Most times they only have a part of a picture, and because they have incomplete knowledge, their writing tends to be wordy." He has found that when a person really knows a subject, that person can say what needs to be said in a straightforward, simple style.

Another important factor that contributes to poor writing is that the writer doesn't know how much the receiver knows, so he adds "things" just in case the reader needs them. The remedy is to say only what has to be said and be done with it.

Get to the Point

"All sorts of benefits come if we will just get to the point right away. I encourage my audiences to begin all writing with 'The purpose of this letter is. . . .' Sure it's artificial," he says. "Though it's stereotyped, that beginning encourages people to follow with their main point." But he cautions that economy is not the same as shortness.

"A two-paragraph letter may be too long, a two-page letter may be too short. It all depends on what you need to say. Sometimes," he explains, "the impulse is to be helpful. You say it's better to give more than less. The great irony in that is that senior people want less. I tell my audiences to try and imagine how little their readers really care."

It sounds cruel, but, according to Murawski, it's true. Receivers, especially those who are commanders, don't have the time to be burdened with all of the little details. They want and should demand to read the bottom line at the top. That's why Murawski recommends as a guide that all letters be no more than one page in length, with enclosures used for any background materials that are necessary.

"All too many people say they have to tell [readers] all this stuff so they'll understand where they are coming from. But the receivers really don't care." Not caring, in part, stems no doubt from the fact that most military communications stay within the military.

"If we did more work with people on the outside, our writing would have to pay more attention to courtesy, tone, and definitely eliminate the jargon," says Murawski. "Audiences just don't seem to understand a lot of what we have to say. Part of that problem is that we tend to write to organizations, not to people.

"It's much easier for a private citizen to say what he thinks. We in government are denied that freedom. We have countless responsibilities as public writers—to ourselves, to our subjects, to the organizations we write for, and to the many readers who will receive the letter." Such varied responsibilities deny military writers the freedom to say exactly what they mean. Murawski doesn't encourage what he calls "cutesie-poo," handholding, backslapping, informal writing. He *does* encourage straightforward, people-to-people conversations.

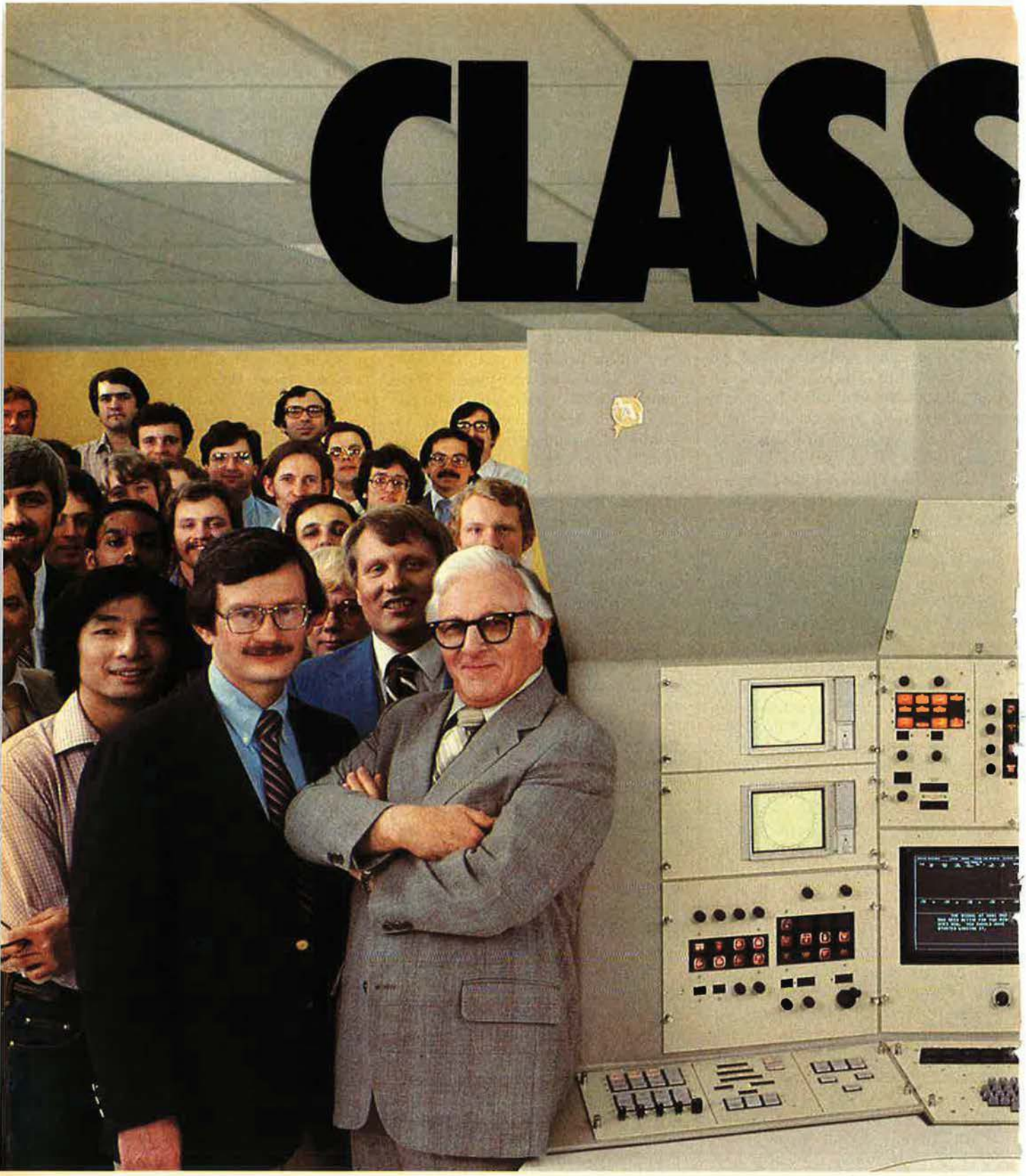
Such writing produces clear, simple, and understandable communication. And such writing requires continual reinforcement.

"I will never be out of a job," says the professor with the impish grin. "But that doesn't mean we are failing. It just means we have a new crop bubbling up every year. It's something we just have to keep at."

And that's what Tom Murawski plans to do for the Air Force, the Navy, or whoever will sit long enough in the pews of the Church of Clear Writing. There, he will continue to preach the gospel, helping to keep the military "fighting and writing." ■

Lt. Col. Terry A. Arnold is the Assistant Director of Public Affairs for Hq. Air Force Systems Command at Andrews AFB, Md. He has held a variety of public affairs positions at base, intermediate headquarters, major command, and Secretary of the Air Force levels. He was formerly editor of Airman, *the Air Force's official magazine, and is a former contributing editor to* Air Force *Magazine. He is a graduate of both the Air Command and Staff College and the Air War College. He holds a bachelor of arts degree in radio-TV-film from Michigan State University and a master of arts degree in mass communications from the University of Denver. Colonel Arnold is a twenty-year Air Force veteran.*

CLASS



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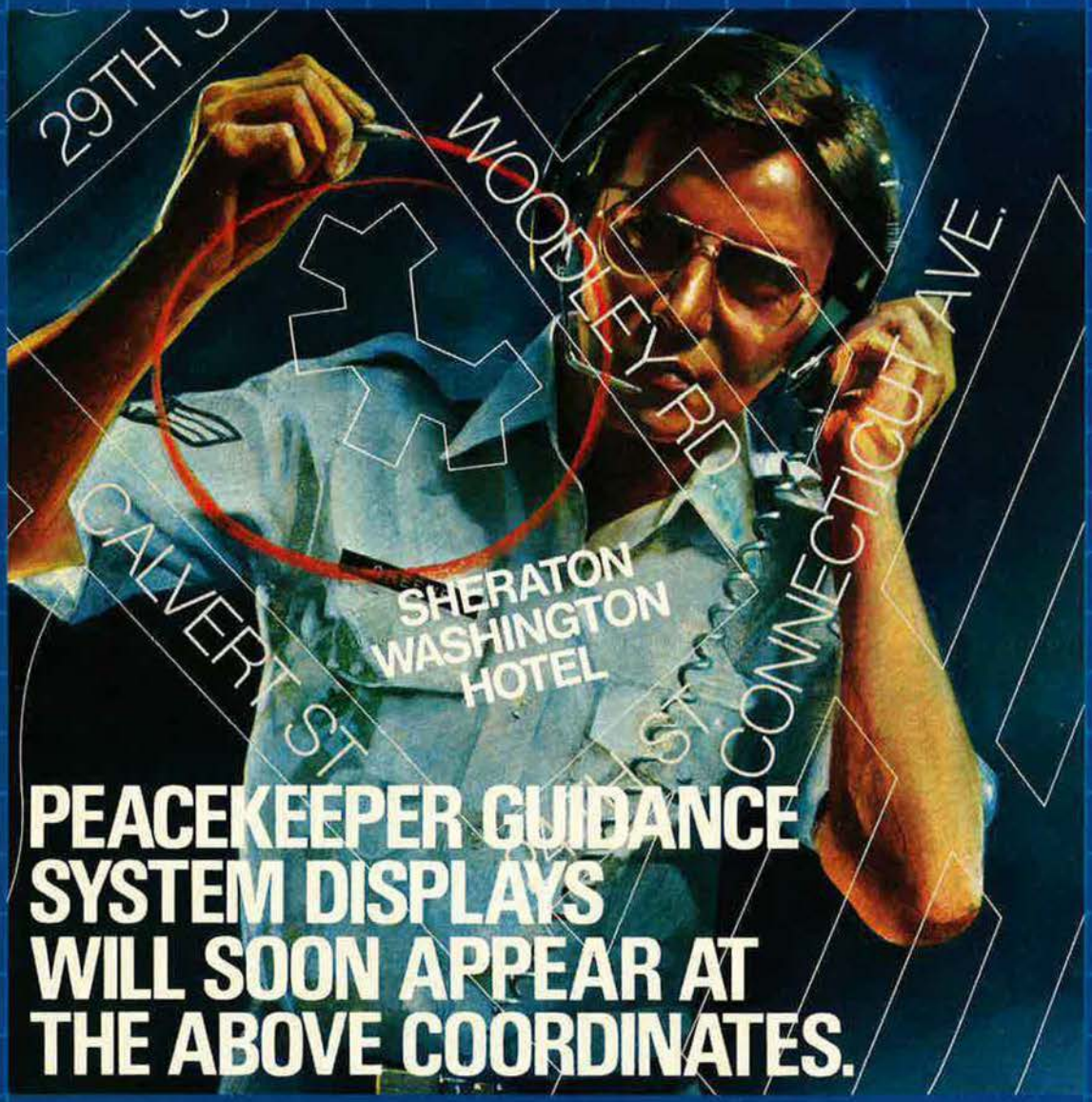

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The Thirty-first Squadron at the Air Force Academy won this year's top honors at the AFA Outstanding Squadron Dinner. They did it by . . .

Emphasizing Teamwork

BY JAMES A. McDONNELL, JR., MILITARY RELATIONS EDITOR
Photos by SSgt. Guido Locati, USAF

The Academy's Thirty-first Squadron won top honors in this year's competition.

Guests included (from left) AFA Colorado Springs/Lance Sijan Chapter President Tom W. Ratteree, AFA National President and Mrs. Dave Blankenship, and AFA Board Chairman Judge John G. Brosky.

President Dave Blankenship (left) congratulates Brig. Gen. Bradley C. Hosmer as astronaut Col. John E. Blaha, Superintendent Maj. Gen. Robert Kelley, and AFA Board Chairman John G. Brosky look on.

THE Thirty-first Squadron of the United States Air Force Academy was the honoree during AFA's 1983 Annual Outstanding Squadron Dinner—the twenty-fourth such event—earlier this year at The Broadmoor in Colorado Springs, Colo.

Thus, the reign of the Fourth Squadron—which had won an unprecedented four in a row *(see "Fourth for the Fightin' Fourth," p. 198, September '82 issue)*—came to an end, although, interestingly enough, one of the two Cadet Squadron Commanders of the Thirty-first during the academic year was Cadet Col. Gregory W. Wheeler, who had spent two years in the Fourth. The Thirty-first won, in their words, by doing "well in all areas rather than trying to do exceedingly well in any one, and also by emphasizing teamwork." The Outstanding Squadron Trophy is awarded for overall excellence in academics, athletics, and military training. The Thirty-first Squadron was first in academics in 1982.

The event this year had as its theme "The Best of the First," a reference to the fact that the first class of the Academy is commencing the celebration of the twenty-fifth anniversary of its graduation. Serving as master of ceremonies for the Dinner was the "First of the First"—the first man, academically, in that first graduating class—Air Force Brig. Gen. Bradley C. Hosmer. The featured speaker for the evening was the Air Force Vice Chief of Staff, Gen. Jerome F. O'Malley, who was one of the original "instant upperclassmen," or Air Training Officers, for that first class.

Also speaking to the Dinner guests were the Academy Superintendent, Maj. Gen. Robert E. Kelley; a returning graduate, Lt. Col. Frederick L. Frostic; and another graduate, Col. John E. Blaha, a NASA astronaut.

General Kelley gave the audience an overview of what it takes to make a winning squadron. He stressed the importance that teamwork held for the Thirty-first's win.

Colonel Blaha, in addition to showing a film of the recently completed "space walk" from the Space Shuttle *Challenger,* urged the cadets in the audience to think ahead to what the Air Force role might be in the next twenty-five years and how they might fit into that picture.

Colonel Frostic stressed that an important aspect of Academy preparation was not necessarily in training the cadets to do something specific, but rather in preparing them for whatever unpredictable things lay ahead in their careers. As he pointed out, "A sure thing is that all things will change—including your perspective. . . . When I left the Academy I tended to favor youth, skill, and speed over experience and cunning. I didn't think anyone over

AFA President Blankenship congratulates Capt. Kimberly J. Dalrymple, the first woman Air Officer Commanding to guide a squadron to the Outstanding Squadron Award. Looking on are (far left) Spring Semester Cadet Squadron Commander James D. Roy and (far right) Fall Squadron Commander Gregory W. Wheeler. President Blankenship made the award at the Academy graduation.

At the head table are (from left) Lt. Col. Frederick Frostic, NORAD's Maj. Gen. Bruce Brown, AFA Board Chairman Brosky, and USAF Vice Chief O'Malley.

twenty-five should be a fighter pilot—that has certainly changed."

General Hosmer (who was also the first Rhodes Scholar from USAFA and who serves now as PACAF's DCS/Plans), in addition to his master of ceremonies duties, also shared with the cadets and the rest of the guests some of his thoughts about the past twenty-five years from his unique perspective. Then General O'Malley, after recalling some of the events of the early Academy days as it moved from its temporary Lowry AFB quarters to the permanent Colorado Springs home, drew parallels between the changes that the Academy has gone through and those that the Air Force and the world have seen since the mid-1950s.

Speaking then primarily to the cadets, he stressed that, in spite of all the changes, the attributes of dedication and commitment—coupled with enthusiasm—will carry them through. "The American people are proud of the uniform you wear," he told them, "it's theirs, it's yours, it's ours. Wear it with dignity, with honor, and with pride."

AFA National President David L. Blankenship then made the presentation of AFA's Outstanding Squadron Trophy to the Thirty-first. Accepting (and also receiving their own recognition in the form of AFA Life Memberships) were the two Cadet Squadron Commanders, Fall Term Commander Cadet Col. Gregory W. Wheeler of Rockville, Md.; and Spring Term Commander Cadet Lt. Col. James D. Roy from Wolf Point, Mont. Finally, after making the announcement that all members of the Thirty-first Squadron would receive a specially struck pewter AFA mug, President Blankenship unveiled the AFA Outstanding Squadron Trophy *(see photo).*

Cadet Wheeler, responding on behalf of the Squadron, gave a tribute to his Squadron mates who had worked so hard—together—to win the award, and also to their Air Officer Commanding, Capt. Kimberly J. Dalrymple. In a very few words, and with vivid imagery, he sketched for the guests the importance of "spirit" to the efforts of the Thirty-first, not only in winning the award but in carrying with them into the Air Force the ability to persevere and to pursue a vision of excellence.

It was indeed an evening to honor the "firsts"—and the Thirty-first Squadron showed that it was, for 1983, "the first." ■

"The Magnificent Academy Band"

AFA President David L. Blankenship began the evening with a surprise announcement, as he said, "Every year, one element that makes the evening a memorable tribute to the outstanding squadron is the work of the magnificent Academy Band." Thus, in conjunction with the Colorado Springs/Lance Sijan AFA Chapter—co-host of the event—President Blankenship presented an AFA Special Presidential Citation to the Band and its leader, Lt. Col. John C. McCord.

The Citation reads: "For extraordinary and continuing contribution as musical ambassadors for the United States Air Force and the Air Force Academy; and for thoughtful, effective support of the Air Force Association. Playing in more states than any other Air Force Field Band and presenting more than one thousand performances annually, these talented musicians exemplify the highest degree of spirit and dedication to the essential *esprit de corps* of our armed forces and have the lasting respect and appreciation of the Air Force Association."

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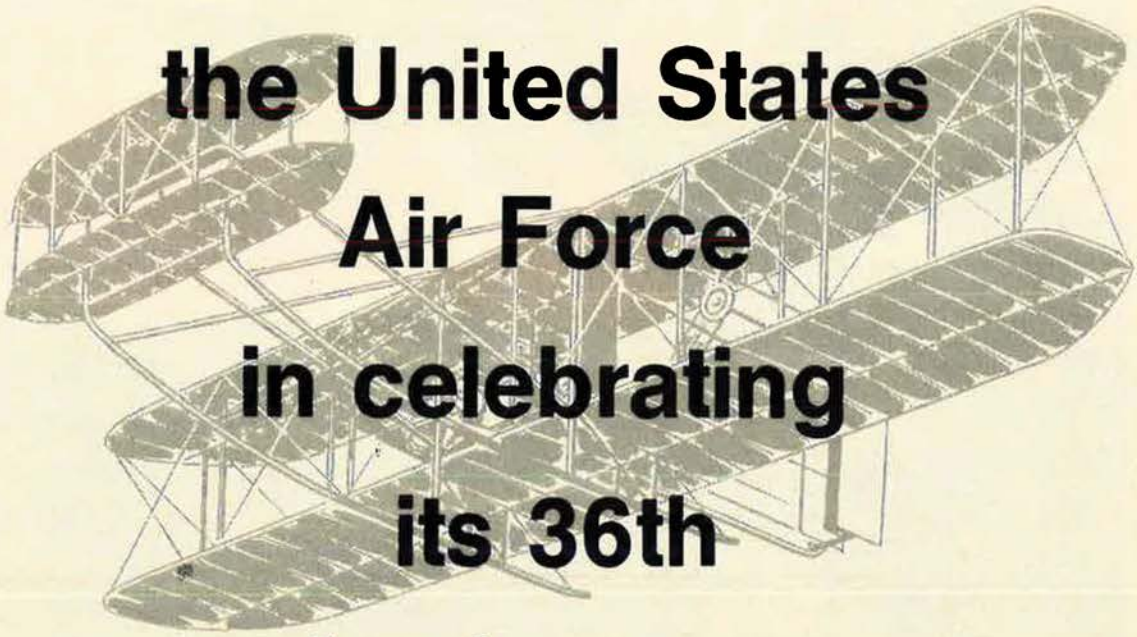

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DATATAPE DIVISION

BELL & HOWELL

They Said It Couldn't Be Done

John Alison's first combat mission added a new element to the air war in China.

BY JOHN L. FRISBEE

On July 4, 1942, Claire Chennault's American Volunteer Group, better known as the Flying Tigers, went out of business, turning its planes and bases over to the newly formed AAF China Air Task Force, later to become Fourteenth Air Force. A few of the AVG pilots stayed on, among them Tex Hill and Ajax Baumler, who had been an ace in Spain. Even before the turnover, AAF pilots began arriving to man the CATF's 23d Fighter Group. One of them was Maj. John Alison, fresh from a year in Russia, introducing our erstwhile allies to the P-40, A-20, and B-25.

The 23d, like its AVG predecessor, was strictly a frontier air force, operating at the end of the war's longest and most difficult supply line. Everything—fuel, ammunition, spare parts for its obsolescent P-40s—had to be flown in over the Hump. There was no ground radar and little in the way of radio aids. At one point, the 75th Fighter Squadron, to which Alison was assigned as Tex Hill's deputy, had nothing but five-gallon cans to refuel its fighters.

Johnny Alison's first few missions were relatively uneventful, with no Japanese aircraft showing up. Then about 3:00 a.m. on July 18, the warning net of Chinese ground observers reported bombers heading for the 75th's field at Hengyang. Alison and Tex Hill stood outside their barracks about a mile from the runway and watched the bombs explode.

Alison asked Hill if the AVG had ever attacked Japanese bombers at night. It seems they had tried early on, but with no success, and had given it up. Whenever there was a moon, the Japanese enjoyed a free ride against Chinese towns and American airfields. "If they come over tomorrow night," said Alison, "I'm going to be up there waiting."

New-guy Alison convinced veteran Ajax Baumler that he was onto a good idea, and sure enough, the warning net reported approaching bombers the next night. Alison took up a position in his P-40 at 12,000 feet with Baumler below him, while warning-net position reports were relayed to them by radio.

The bombers, expecting another free ride, made two leisurely passes over the Hengyang runway before Alison was able to pick up the faint flame from their engine exhausts above him as the bombers turned on their bombing run. He pulled up the nose of his P-40, firewalled the throttle, and at the last moment saw he was closing too fast in this unpracticed nighttime maneuver. Chopping the throttle, Alison sideslipped to kill his speed and slid smack into the middle of a three-bomber V formation.

The top turret of the bomber on his right opened up at point-blank range, stitching Alison's P-40 from nose to tail. His radio was knocked out, one slug went through the seat, and another grazed his left arm. Almost immediately the P-40's engine began to run rough. In that situation, any fighter pilot could have been forgiven for thinking the AVG was right, and now was a good time to head for home. Not Johnny Alison. He kicked his fighter around and blasted the bomber on his left with the P-40's six .50-caliber guns. Oil covered his windshield as the bomber pulled straight up and disappeared. Swinging back to the right, he exploded the bomber that had hit him. By that time, flames were popping out from the engine cowling as he turned on the lead bomber and blew it up.

Alison at last pointed the nose of his wounded fighter down, heading for the blacked-out 3,500-foot runway as the engine threatened to jump out of its mountings and flames spewed from the cowling. There wasn't time for a planned approach. He came in too fast with only one viable alternative—to overshoot and crash-land in the river about two miles ahead. Clearing a railroad trestle by inches, he hit the water with a resounding crash, climbed out of the sinking P-40, and swam to a log raft near the shore. A young Chinese man pulled the bleeding Alison out of the water.

While all this was going on, Ajax Baumler had shot down two more bombers. As a result of Alison's experiment in night interception, for which he was awarded the DSC, Japanese bombers didn't come back in darkness for almost a year.

Johnny Alison ended his tour with the colorful 23d Fighter Group as an ace with six air-to-air victories and several probables. He then became Phil Cochran's deputy commander of the equally colorful 1st Air Commando Group in Burma.

But don't go away. There's a sequel to that first night interception. After the war, John Alison served as an Assistant Secretary of Commerce, President of AFA, a major general in the Reserve, and a vice president of Northrop Corp. On a visit to one of Northrop's research organizations near Boston, he was introduced to its chief engineer, a Dr. Tsien. It came out that Tsien had lived near Hengyang while Alison was stationed there.

"Were you a bomber pilot?" asked Tsien. Alison replied that he had been deputy commander, then commander of the 75th Fighter Squadron. "Then we have met before," said Dr. Tsien. "I'm the man who pulled you out of the river." ■

The Guard PME Center believes citizen-airmen should be in top condition—professionally, mentally, and physically.

Seeing the Belt Buckle

BY JAMES A. McDONNELL, JR.
MILITARY RELATIONS EDITOR

IT'S AN officer-commissioning school, it's an NCO academy, it's a leadership school—it's all of these together in a unique setting, under one commander, and using one staff and sometimes with instructors swapping course appearances. "It" refers to the Air National Guard's I.G. Brown Professional Military Education Center (PMEC).

Located at McGhee-Tyson ANG Base at Alcoa, Tenn., about twelve miles south of Knoxville, the PMEC is the single ANG organization that conducts professional military education. This summer the organization was preparing for its first change of command *(see box)*. Col. Edmund C. Morrisey, Jr., had been Commander since the PMEC began in August 1968.

"Our goal at the PMEC is to increase the professionalism of each person who attends," says Maj. Gen. John B. Conaway, Director of the Air National Guard. "The entire Total Force, including the ANG, will become more and more complex as sophisticated weapon systems are added to our inventory in the 1980s. We have to develop leaders, officers, and NCOs who will be able to solve the problems in this era of high technology."

General Conaway believes the PMEC "is training those people today. Graduates are more capable in finding solutions to problems and in communicating those solutions to the people they work with at their bases. We are very proud of the trained professionals who instruct in the school and who graduate equally competent trained professionals."

The need for a professional education center geared specifically to the different needs of the citizen-airman was a cherished dream of Maj. Gen. I. G. Brown, who served from 1970–74 as the first titled Director, Air National Guard.

Colonel Morrisey remembers that when he first took over he "knew very little about enlisted PME, and I wasn't really sure that the company was putting its money in the right place. After a couple of years, I realized that PME was not only important, but vital. Now, and at the risk of being thought subjective, I honestly believe that if I had to name a half dozen things that have had the most impact in shaping today's ANG—exclusive of mobilization—this place would be right among them. And the reason for that is simple—we change attitudes here."

Some of those whose attitudes have indeed changed—the students—heartily seconded Colonel Morrisey: "There is almost nothing here that is done by accident." "You have to make decisions and set priorities. This is what they're trying to instill in us." "There is individualism, but a person cannot really get through this course without being a team member." "Everything here funnels into mission effectiveness." These comments point up the spirit that is readily evident to an observer at the PMEC.

While several specialized courses are offered form time to time at the center, depending on need, the basic offerings are the three PME courses mentioned at the outset of this article. The ANG leadership school, for example, trains enlisted people in grades E-4 and E-5 for the assumption of supervisory positions.

AFA Citation to Colonel Morrisey

On July 21, Col. Edmund C. Morrisey, Jr., the only Commander PMEC has ever had, relinquished command to Lt. Col. Herbert D. Wright. At the change-of-command ceremony, AFA presented Colonel Morrisey a special AFA citation signed by AFA President David Blankenship. The citation reads: "With the respect and appreciation of the entire Air Force Association for his unique contribution to the education and development of the professional men and women of the Air National Guard of the United States Air Force."

The goal is to prepare the students for mid-level enlisted management on return to home units. A broad curriculum encompassing communicative skills, leadership and management, military training, and military justice contains a minimum of 143 academic hours. Recognizing the need of Guard members to spend as little time as possible away from their civilian jobs, the program is divided into two courses of two weeks each. Both are needed for graduation and, optimally, the student would complete them in succeeding years.

Over the years, PMEC's NCO Leadership School has returned 1,120 graduates to their home bases. The average age of these students—reflecting the Guard population and somewhat older than the student group of a comparable active-duty school—is thirty-three.

The ANG NCO Academy, the first unit established at McGhee-Tyson, has also tailored the normal six-week Air Force NCO Academy curriculum to the citizen-airman. While a "long course" of six weeks is offered, there is also a phased program that splits the requirements into two-week segments. ANG NCOs are encouraged to complete these back-to-back in two years. The split course has been dubbed the "Two-by-Two" by some and the decidedly more descriptive "Pressure Cooker" by others. But both faculty and students agree that it is no different academically from the six-week program. PMEC divides the normal six-week course in half and, by eliminating field trips and several other social broadening aspects, compresses each three-week segment into two.

A senior faculty member told AIR FORCE Magazine: "As an educator and a program administrator, I would much rather, if I had my druthers, see everyone go through the six-week program. But I'm a realist and I know our audience—Guardsmen. So, we've adjusted.

"Over time, and through our management, we've gotten to the point where, academically, there's no difference. Because we try even harder, I'd say the motivation and the professional attitude is just as paramount in the 'Two-by-Two' as in the six-week program."

Since its inception, the NCO Academy has graduated 5,969 technical and master sergeants. The average service of this group is a little over fifteen years, and the average age is thirty-nine.

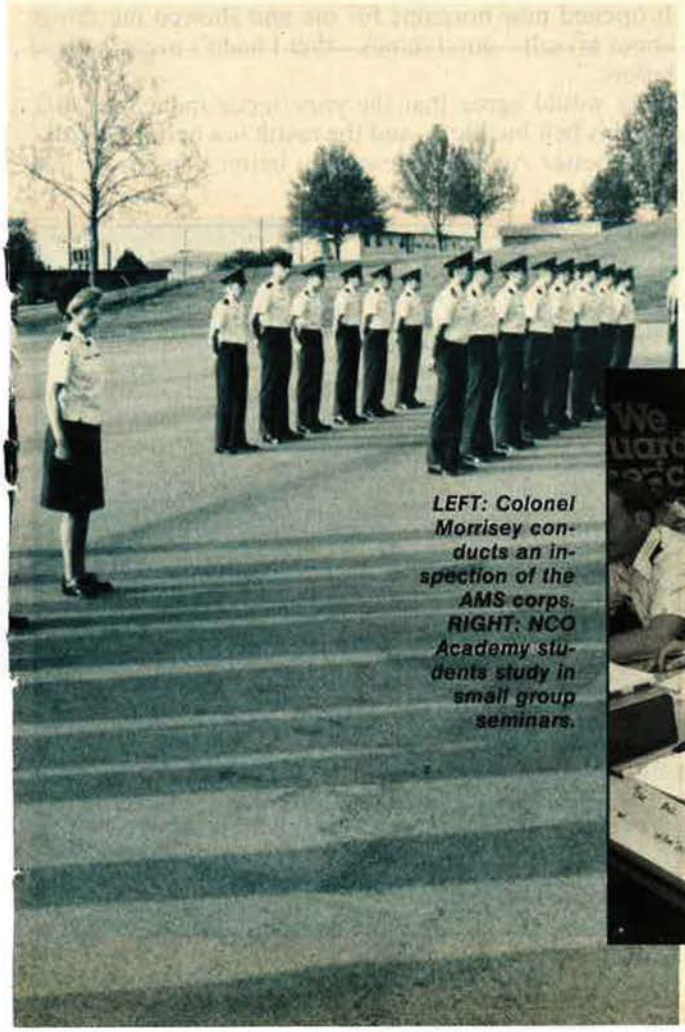
The third leg of the PMEC stool is the Academy of Military Science (AMS) that prepares candidates—both civilians and those with prior service—for duty as ANG officers.

As a comparison, the Air Force Officer Training School (OTS) at Lackland AFB, Tex., runs a twelve-week program. The PMEC course length is six weeks.

Another difference PMEC officials note is that the upper-class system of OTS leadership is one element that PMEC cannot crank in because of time limitations. However, they stress that the course content is basically the same. (In regard to time, AMS students at PMEC are on the run from about 5:30 a.m. to sometimes as late as midnight. Also, in comparison with OTS, PMEC students usually arrive highly motivated because of the preliminary competition for slots and screening usually conducted at state level.)

Officer candidate George Clark of New Jersey's 177th Fighter-Interceptor Group at Atlantic City is perhaps more qualified to appraise the AMS course than most. He is one of a handful to have graduated from both the PMEC Leadership School and NCO Academy before attending AMS.

He believes that the three schools do an excellent job of tailoring their curriculum to Guard members, who are usually better educated and somewhat older than typical blue-suiters. At least in his case, the course content was a good match for the ANG slot he occupied at the time. Especially evident to him was AMS's increased emphasis on military training. In contrast with those attending



LEFT: Colonel Morrisey conducts an inspection of the AMS corps. RIGHT: NCO Academy students study in small group seminars.

—USAF photos by MSgt. Ray Taylor, TennANG

Students Enjoy 'State' Rooms

One of the more interesting aspects of the PMEC is the "state" rooms. The two-person student quarters in the Leadership School and NCO Academy have, in many cases, been decorated by state contributors. PMEC encourages this. In many cases, spurred by Guard units, state officials undertake to see how reflective of their state the room can be made. All visiting groups are shown the various state rooms, now numbering about forty, and competition is growing to make a given room the eye-catcher for future visitors.

All proposed remodeling and refurnishing is approved by the PMEC and is done at no expense to the school.

PMEC assigns students to rooms decorated by other than their home states. This serves as a universal topic of conversation and helps in the rapid development of team spirit.

the NCOA, the AMS student usually has less military experience.

To date, 3,471 officer candidates have graduated from AMS. Although the course content of the six-week program is patterned on OTS, PMEC officials point with pride to some areas where they believe they have pioneered. For example, the school emphasizes a "merit system" rather than a "demerit system" to increase motivation. AMS was the first Air Force precommissioning program to integrate men and women students fully into the same flights and—in 1973—was first to assign a woman faculty advisor to an all-male flight.

As Colonel Morrisey exits, he leaves behind a legacy based on the strength of his presence during the fifteen years of his command. It's no coincidence that he's known unofficially as "Mr. School." What does he see in PMEC's future?

He has already recommended for change one area with which he is intimately familiar—tenure. Several PMEC instructors have been assigned almost as long as Colonel Morrisey, with most faculty and staff serving about ten years. The Colonel has recommended to ANG Headquarters that a four-year tour become the norm.

This seems likely to be accepted, although not all agree. The opinion of one seemed to reflect that of many students: "I think it would be good for the instructors. For the students it will be more difficult. I feel that you need a core of people that can maintain the standard of excellence." On the other hand, some students believe that the lengthy tenure tended to insulate the instructors from the "real-world" problems faced by the students back home. Best guess is that some form of controlled tour will be adopted.

Colonel Morrisey has also recommended an expansion of facilities at PMEC. He would like to see both the NCO Academy and the Leadership School operate throughout the year. Currently, both share billeting, classroom space, and faculty, and alternate use over the year. With expanded operation, the number of students could be doubled.

One aspect not likely to change is the centralization of PMEC in Tennessee. Although some sentiment has been expressed that the present location of all three PMEC schools is a disadvantage to western-based Guard people, there is no groundswell to change. In fact, centralization is seen as a plus. As one student put it: "if we had one in California, one in Tennessee, and one wherever, you would not have the camaraderie that I think our school here gives us. I can go in any state in this country and almost any city with a Guard unit and there's someone I know or can relate to. In the Air Force they stress MAC or TAC and that's okay—but here, if you've gone to the PME or AMS, you've been *here*. As they tell us in communications class, we've got a 'common core of experience,' and it's great."

Or, as the school administration more prosaically puts it, "Given the nature of the Guard, you could wind up with fifty-four different ways of doing things—one for each of the states and territories. This way every Guardsman gets something in common and a standard that has to do with the Guard and not with the understandably different requirements of the states."

An important aspect is that PMEC courses are accredited with the Southern Association of Colleges and Schools. The training is not only useful to Guard bluesuiters, but also to their civilian employers. So it comes as no surprise that PMEC graduates frequently advance in their civilian jobs—despite the time devoted to Guard duties.

Colonel Morrisey has noted that he wants the students "to see their belt buckles." While specifically referring to PMEC's physical conditioning, there is no question that this philosophy permeates academics and military training as well.

ANG's most recent Senior Enlisted Advisor, CMSgt. Lynn E. Alexander, underlines this when he relates that his view of the PMEC is grounded firmly in his personal experience. "Whatever career success I have had," he says, "can be tied directly to the PMEC NCO Academy. It opened new horizons for me and showed me things about myself—good things—that I hadn't even realized before."

He would agree that the experience indeed let him "see his belt buckle"—and the result is a better Guardsman, better Air Force resource, better person. ■

A Testimony to I. G. Brown

Maj. Gen. I. G. Brown, for whom the PMEC was named on June 30, 1978, was the consummate Air National Guardsman.

Born in Hot Springs, Ark., he entered civilian aviation as an FAA licensed instructor and commercial operator. In 1942, he was commissioned a first lieutenant and assigned to the Air Transport Command. Subsequently, he became the Commander, First Ferry Division, at Love Field, Tex. Later, he served as chief pilot with the First Foreign Transport Group, stationed at Miami, Fla.

After World War II and Reserve service, he transferred to the Arkansas National Guard and, in 1950, was appointed its Chief of Staff. During the Korean War, he was recalled to active duty and from then on remained on extended active duty.

He filled a variety of Guard posts and, in August 1962, was appointed Assistant Chief, National Guard Bureau for the Air National Guard. In December of 1969 that title was changed to Director, Air National Guard. He served in that position until 1974.

General Brown died in September 1978. The PMEC that bears his name is indeed a testimony to his enduring crusade to establish a center for the professional advancement of Guard people, taught by Guard people, and located on an ANG base.

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AIRMAN'S BOOKSHELF

Foreign Adventurism—Soviet Style

Soviet Policy and Practice Toward Third World Conflicts, by Stephen T. Hosmer and Thomas W. Wolfe. Lexington Books, Lexington, Mass., 1983. 313 pages. $23.95 cloth.

This is a comprehensive, "must-read" book for policymakers and Air Force officers concerned with Soviet actions in the Third World.

The authors, Dr. Stephen T. Hosmer (senior staff member at the Rand Corp., and a former Air Force intelligence officer) and Dr. Thomas W. Wolfe (a Rand consultant, retired colonel, and former air attaché to Moscow), have exhaustively researched Soviet involvements in the Third World since 1946.

Their efforts have produced a very readable 180-page text that is extensively documented and indexed; it also contains an excellent bibliography. This book is objective and convincing.

Part I of the book traces the evolution of Soviet policy and practice in Third World military conflicts through various case examples. From this the authors distill a relatively consistent pattern of Soviet objectives and recurrent activity that is presented in Part II. This includes:

Direct Soviet combat involvement in such Third World conflicts as Afghanistan; cooperative intervention, namely the underwriting of another country's participation in an ongoing conflict, such as that of Cuba in Angola; matériel, logistics, training, and advisory support of Third World client states engaged in internal or external conflicts; and, finally, economic, diplomatic, and political-military support of client states.

Each of these patterns of activity is individually analyzed and certain axioms of Soviet conduct are explained. The authors suggest that Soviet policy in the Third World is reactive, but opportunistic. The Soviets cautiously exploit opportunities they perceive to be generally low-risk—that is, unlikely to lead to direct confrontation with the United States.

In part, the authors find that the Soviets decide to exploit Third World conflicts when the United States is perceived to have few interests in the area, is politically constrained from acting, or has no viable response options.

Whenever possible, Soviet commitments to Third World clients involved in conflict are carefully hedged and tailored. They are often designed to lower the profile of Soviet involvement and the possibility of conflict escalation.

For example, the authors point out that the Soviets sent aid through China to North Vietnam rather than by sea to Haiphong during the Vietnam War. The Soviets anticipated that Haiphong harbor might eventually be blockaded by the United States, and therefore used the Chinese supply route, thereby minimizing the possibility of a direct confrontation with the US.

Part II of the book also provides an insightful analysis of the Soviet intervention in Afghanistan. The authors contend that this action was in many ways consistent with past practices of the Soviets in the Third World. The intervention may signal more frequent direct combat involvement and a generally more assertive Soviet role in the Third World.

The authors conclude with two particularly well-written chapters. One concerns future Soviet involvement in the Third World. The other chapter identifies some important policy options for influencing Soviet involvement in Third World conflicts.

Fundamentally, the authors find that the US and its allies must adopt and sustain long-term coherent policies and programs that strengthen political, economic, and military institutions of Third World states to reduce their vulnerability to adverse internal political change. Soviet opportunities in the Third World would, in effect, be foreclosed.

In this regard, they also suggest that the United States tailor military assistance and advisory programs to strengthen Third World military institutions. Flexible arms-transfer policies will be required to meet legitimate external and internal security requirements of Third World countries.

—Reviewed by Lt. Col. Curtis S. Morris, Jr., USAF, currently serving on the Air Staff at the Pentagon.

Channel Deliverance

The Miracle of Dunkirk, by Walter Lord. The Viking Press, New York, N. Y., 1983. 323 pages with notes, bibliography, index, photos, maps, and charts. $17.95.

Walter Lord, a masterful narrator and researcher, has written a stirring account of the deliverance of the British Expeditionary Force from Flanders in late spring 1940.

On May 24, there seemed to be no escape for the 400,000 allied troops pinned against the North Sea by the German Wehrmacht, but by June 4, more than 338,000 men had been evacuated to England.

Their escape proved to be a crucial turning point in World War II, for had Hitler's forces annihilated or captured the British Army, Britain would have probably left the war.

Lord builds his story by skillfully weaving together the accounts of hundreds of participants in the drama (from privates to field marshals) from both sides. We read of sailors who had their ship bombed out from under them refusing to be picked up by other vessels so that they would not take the place of soldiers needing rescue from the beaches.

We also learn, however, of the civilian-sailor crew members who refused to participate in the evacuation, and of desertions on a few Royal Navy ships (243 vessels were sunk by the Germans during the evacuation). Some British soldiers, furthermore, were shot by their commanders because they rushed boats out of sequence.

The author tells us also of Vice Admiral Bertram Ramsay, the hero of the

evacuation. Ramsay operated for nearly the entire ten days without sleep as he orchestrated the rescue, making the name Dunkirk ring so resoundingly in the British military lexicon.

We hear also of Maj. Gen. Bernard Montgomery, who marched his men twenty-five miles in a single night over unmarked back roads within 4,000 yards of the enemy's guns in order to plug a gap in the line opened by the sudden surrender of Belgium.

Most significantly, for military readers, we learn that Dunkirk was no miracle, despite Lord's generous support for that idea. More than a triumph of British will and genius, it was a failure of German strategy and thinking. Hitler saw Paris as the goal and disregarded Clausewitz's key dictum that until the enemy's military is crushed his will can never be conquered.

Hitler, eager to defeat France—yet recognizing that Britain was his strongest enemy—nearly disregarded the British Army and left its annihilation to Hermann Göring. The Luftwaffe Commander boasted that his air force, acting alone, could prevent the evacuation and destroy the British Army. He needed air superiority to win, but the Royal Air Force denied this to him by slaughtering Heinkel, Stuka, and Messerschmitt pilots.

Walter Lord, then, has given us a fine history on all levels—a smashing human interest history that does not leave out the most important strategic dimensions.

—Reviewed by Col. Alan L. Gropman, USAF, Deputy Director of Air Force Plans for Doctrine, Strategy and Plans Integration at the Pentagon.

New Books in Brief

Above and Beyond, 1941–1945, by Wilbur H. Morrison. The final entry in the author's trilogy of histories of airpower in World War II (the others being *Point of No Return* and *Fortress Without a Roof),* this book covers the carrier air war in the Pacific from both the American and Japanese perspectives. Relying heavily on eyewitness accounts, the book chronicles the fierce battles across the largely empty ocean as the carrier established itself as the prime offensive weapon of naval warfare. Author Morrison also casts a critical eye on the senior military leaders in the Pacific theater, judging their performance and examining the many petty rivalries that threatened the efficacious conduct of the war. But it is the gripping first-person stories of individual heroism and tragic failure that enliven the text and make for a page-turning read. With photos, select bibliography, and index. St. Martin's Press, New York, N. Y., 1983. 314 pages. $16.95.

Air War Over Korea, by Larry Davis. Subtitled *A Pictorial Record,* this booklet shows the history of the war in the skies above Korea through 256 black-and-white photographs, 102 paintings, and forty-five color photos. As the many illustrations testify, the air war in Korea was one of fundamental transition as both sides moved from prop-driven aircraft of World War II vintage into the first jets. Author Davis complements the illustrations with an informative text that is divided into chapters covering the various types of operations—fighter-bomber, bomber, air defense, reconnaissance, etc. Available from Squadron/Signal Publications, 1115 Crowley Dr., Carrollton, Tex. 75006, 1982. 96 pages. $8.95.

The Battle for the Falklands, by Max Hastings and Simon Jenkins. This is probably the finest account of last year's Falklands War yet published. London *Standard* reporter Hastings sailed with the Royal Navy's Task Force and observed the war firsthand; Jenkins, who is political editor of the *Economist* magazine, followed the political and diplomatic story as it developed in London, Washington, and other world capitals. Instead of rushing into print with their story, the authors sifted through the text, double-checking facts and conducting interviews with every major participant in the war. The result of their painstaking research is a detailed, day-by-day record that is sure to remain the classic text on the war for years to come. (The only drawback to the book is that the authors had only limited access to Argentine records or participants, and the book is thus limited to the British perspective.) With photos, maps, chronology, glossary, appendices, and index. W. W. Norton & Co., New York, N. Y., 1983. 384 pages. $17.50.

The Israeli Army, 1948–1973, by Edward N. Luttwak and Daniel Horowitz. Originally published in Britain in 1975, this scholarly book is the first of a planned two volumes. As the authors state in their introduction, this book is an effort "to explain the phenomenon of the Israeli Army." Focusing on the men and ideas that have guided the evolution of this "phenomenon," the authors trace its development from the informal, fractious Zionist militias of preindependence days to the modern, highly respected war machine of a generation later. Though the issues are complex, the authors suggest that the Israelis may owe much of their success to the *lack* of a staid military tradition and to the relentless but dynamic pressures of internal and external conflict. With maps and diagrams, notes, appendices, and index. Abt Books, Cambridge, Mass., 1983. 398 pages. $25.

The Non-Nuclear Defense of Cities: The High Frontier Space-Based Defense Against ICBM Attack, by Lt. Gen. Daniel O. Graham, USA (Ret.). When President Reagan publicly committed this nation (in his famed "Star Wars" speech) to some form of space-based strategic defense against nuclear ballistic missiles, the scheme described in this book by former Defense Intelligence Agency Director Graham must have been prominent in his mind. The High Frontier concept involves space- and ground-based nonnuclear intercept systems that would rely on either hypervelocity missiles or directed-energy beams, or a combination of both, to bring down incoming missiles or warheads. General Graham makes a case that this system is "militarily sound, technologically feasible, fiscally responsible, and politically practical," and would be a "technological end-run on the Soviets." Readers of this book can weigh General Graham's arguments for themselves. With figures and appendices. Abt Books, Cambridge, Mass., 1983. 152 pages. $25.

Vengeance Weapon 2: The V-2 Guided Missile, by Gregory P. Kennedy. Described by one American pilot who encountered it in flight as "a Bronx cheer in smoke," the German V-2 rocket was the first true ballistic missile ever used in combat. Though Hitler expected that his "wonder weapon" would reverse the tide of battle, the fact was that Germany had already lost the war by the time the missile became operational, and, as the author concludes, "The V-2 failed as a weapon of war." However, the V-2 did point the way to the development of the ICBM and the Saturn-V moon rocket. It was, the author says, "the technological base from which we entered the space age." Gregory Kennedy has performed yeoman service in providing readers this brief but well-researched history of the V-2. With photos, appendices, and bibliography. Published for the National Air and Space Museum by the Smithsonian Institution Press, Washington, D. C., 1983. 87 pages. $9.95.

—Reviewed by Hugh Winkler, Assistant Managing Editor.

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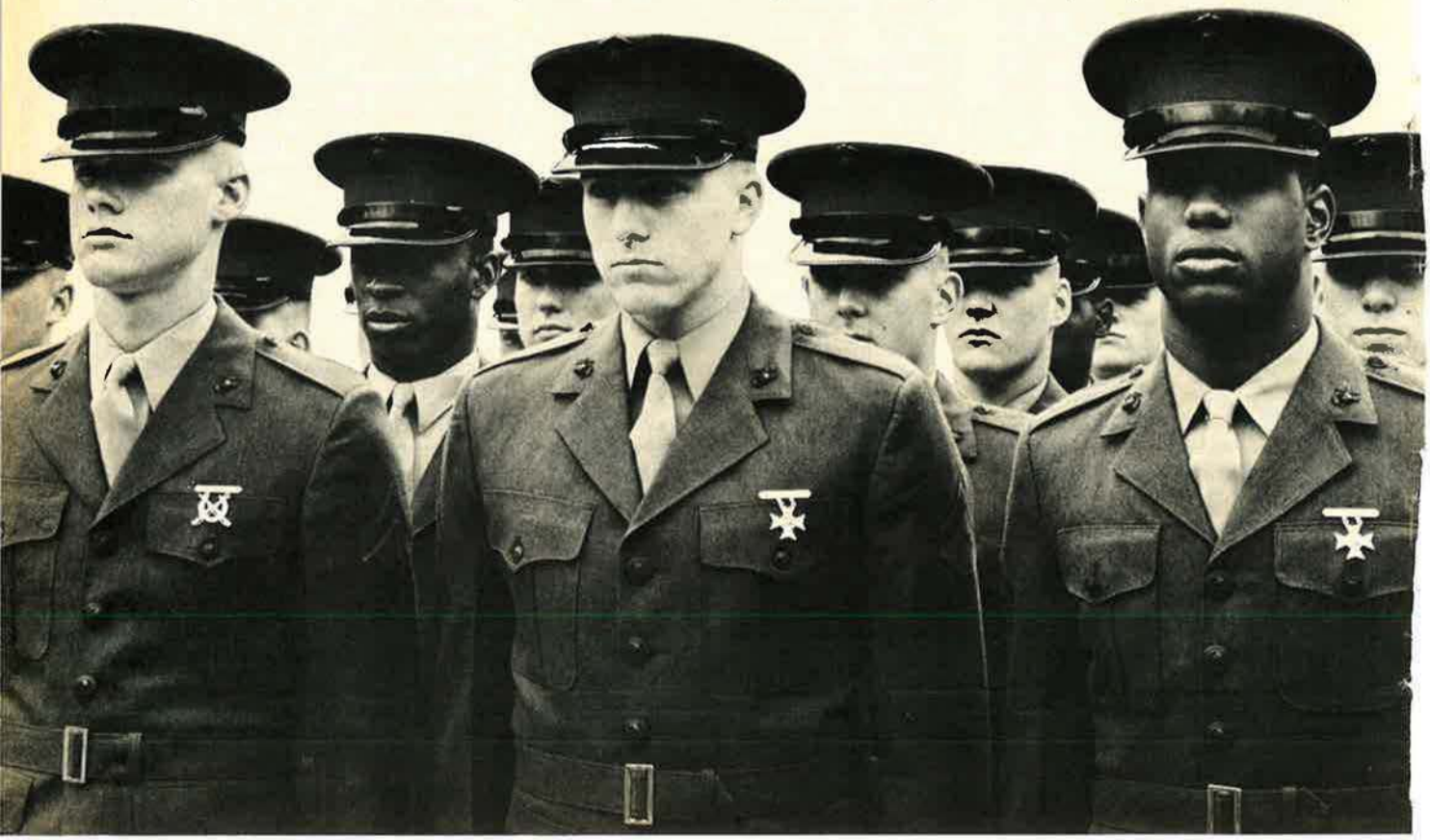

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THE BULLETIN BOARD

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

Private Panel Suggests DoD Cuts

For the past year, a Presidentially appointed volunteer task force of private sector business people, headed up by W. R. Grace & Co. Chairman J. Peter Grace, has been taking a sharp look at how DoD operates. The group, formally designated the President's Private Sector Survey on Cost Control, released its report in mid-summer. Chairman Grace admitted at the outset that his team took only a "businesslike look" at the situation and gave no consideration to either political or volunteer force motivational factors. Thus, while large savings were recommended—perhaps as much as $100 billion in the next three years—Administration officials were reluctant to embrace them unreservedly. Secretary of Defense Caspar Weinberger commented that "it would be cruelly unfair for the American people to perceive that vast savings can be realized within a very short time."

Some of the recommendations include:

- Changing both the formula currently used to compute retirement pay (to 1.3 percent times the high three-year average times years in active service) as well as requiring thirty years of service for full benefits. The report noted that "retirement pay for military personnel is rapidly becoming unaffordable for the Nation. A system that starts retirement pay as early as age thirty-seven, with benefits equal to half of terminal base pay or more, generates an enormous outlay."
- Consolidation of Air Force Reserve and Air National Guard activities. This recommendation alone is estimated to save about $50 million annually.
- Ensuring better utilization of MAC airlift spaces by contracting overseas service to other government agencies and also by charging a penalty for no-shows.
- Combining the management of the entire military health system. CHAMPUS users would be shifted to on-base sites, and greater cost-sharing would be required by users.
- Closing of virtually all commissaries in the continental US. The report states that this act alone would save more than $1 billion in the next three years.

While the President asked for the report and is expected to give it public consideration, informed observers see little likelihood that much of the recommended action will take place. Perhaps the biggest obstacle is that some ninety percent of the projected savings would require congressional action to change applicable laws. Congress has looked at many of these same ideas in the past and elected not to make changes.

Lt. Col. Robert Tonner, 18th Security Police Squadron Commander, Kadena AB, Okinawa, Japan, accepts certificate of appreciation from Seiji Nakaema, senior police superintendent, Chief of the Okinawa Police Station, recognizing the mutual cooperation between the police agencies. Colonel Tonner, newly reassigned to Ellsworth AFB, S. D., had been at Kadena for three and a half years as police chief. (USAF photo by Sgt. Carolyn Zephir)

CHAMPUS Payment Changes

After a three-year test CHAMPUS has made permanent its program of paying certified nurse practitioners as independent providers of care. This should make it easier for CHAMPUS patients to get the care that they need in areas where there is a shortage of doctors. Collaterally, dollar savings to both the patient and the government should occur because a nurse practitioner's bill is usually lower than a doctor's for similar services.

Before the test program began in 1980, nurse practitioners were authorized as CHAMPUS providers only when they were referred and supervised by a doctor. To qualify, a practitioner must be a licensed registered nurse and must be licensed or certified as a nurse practitioner in the state in which care is given—if the state has such requirements. If the state lacks such a requirement, CHAMPUS requires the individual be certified by a professional organization.

CHAMPUS stressed that this change does not authorize payment to "physician extenders or assistants."

Veterinarians Serve Exchange Service

Ask most base exchange customers if they knew that the Army and Air Force Exchange Service (AAFES) employs veterinarians, and you'll probably get a blank stare. Go on to say that indeed they do and then ask what they are used for, and most will try to think

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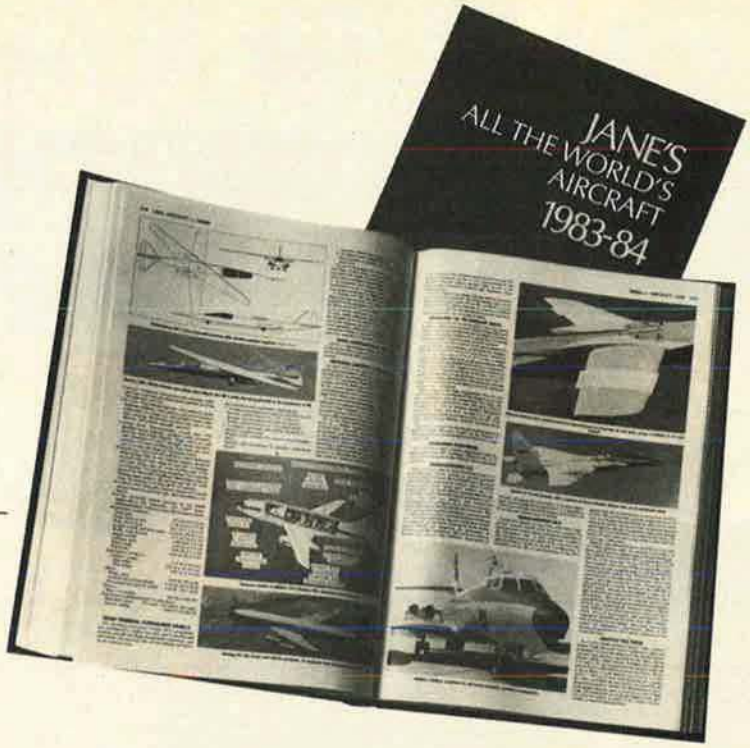

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when the AAFES got into the pet business.

Actually, according to Army Maj. Henry W. Derstine, Staff Veterinarian at AAFES Headquarters in Dallas—other vets are found in Hawaii serving the Pacific Exchange system and in Munich, Germany, for the European system—Exchange veterinarians are not concerned with animals, but rather "with the health of the troops and their families."

The animal doctors review all food facilities and storage areas, beauty and barber shops, shopettes, and four-seasons stores. Also, on staff visits, they visit the local medical facility to ensure that a good rapport exists between them and the Exchange people. Additionally, they try to work out uniform approaches to such problems as the shelf life of sandwiches, a recent bone of contention between the Army and Air Force.

Also, the veterinary staff coordinates with the US Department of Agriculture for control of diseases, whether foreign or domestic, biologic or zoonotic (spread of disease from animal to human). This includes continual review of import/export regulations, transportation of food from one country to another, and inspection programs. The AAFES veterinary staff also becomes involved when there is a hazardous recall to make sure that everyone is notified and that required action is taken.

Health and beauty aids also come under their scrutiny when there is a question as to whether the product is safe. The same applies to insecticides and pesticides.

All in all, as Major Derstine points out, "we get involved with training for coordination with food service courses. We even get involved with engineering to help them meet sanitation requirements of buildings and ensure that equipment is safe to operate. We tend to work a broader scope of jobs than most medical people."

What do veterinarians do in AAFES? "Just about everything" would be a good answer!

THE BULLETIN BOARD

Air Force Surveys Returnees

In an imaginative approach to retention, the Air Force, which has always surveyed those exiting, is also asking officers applying for recall what convinced them to return. While recognizing that the decision to separate or remain for a career is a very personal one, the service is publicizing some of its findings to assist those who might currently be weighing the decision to stay or go.

Some interesting comments are surfacing from the survey. For example, a support officer now back in the fold at Tinker AFB, Okla., had left because he "was offered a partnership that appeared too good to pass up." He now says he "knew I had made a mistake within the first year. My primary disappointment," he explains, "was that I simply missed the Air Force way of life. The friendships, responsibilities, comradeship, and all the other things just didn't exist in civilian life the way they do in the Air Force."

An F-4 weapons officer says he left due to frustration with his assignment. However, while he found civilian job benefits and compensation to be rewarding, he also found "there were two things tremendously lacking—integrity and a strong sense of purpose. Integrity was related to theoretical discussions only, and the only sense of purpose at the lower levels was money." He added that in the Air Force he felt "pride" and that he could never "equate or replace that with dollars." He found himself anxious to get back within about six months.

The Air Force says it doesn't want anyone to stay in who thinks they might like it better elsewhere. However, this survey points up that before deciding to separate, it might be wise to discuss choices and options with someone who has been "on both sides of the fence."

VA to Expand Health Services

The VA has drawn up plans for adjustments to its current roster of medical facilities that will carry its programs through 1990. All in all, at least forty-six facilities are planned to be added and perhaps as many as six dropped.

Planned expansions include twenty-six nursing home units, twenty-three psychiatric units, four rehabilitation services, two spinal cord injury units, and one neurology service. Also being looked at is the possibility of establishing domiciliaries in seven new areas and outpatient clinics in two new locations.

As part of the overall plan, it is also proposed to close surgical bed services at four VA Medical Centers and psychiatry bed services at two other

During the recent Shriners Circus in Marietta, Ga., near Dobbins AFB, members of the 94th Tactical Airlift Wing (Reserve) provided transportation for and helped escort students from local Boys' and Girls' Clubs. Some 120 children were involved. Shown here is TSgt. Larry Gullia, 94th TAW public affairs specialist and President of the Dobbins Community Relations Council, which sponsors year-round events in the Atlanta area. With him are two of the children and a Shriner clown.

centers. The plan involved grassroots input from the VA's Department of Medicine and Surgery's twenty-eight districts. It was based on the premise that use of local knowledge of resource needs and existing capabilities would result in more efficient services and better resource use than would decisions based solely on planning that is centrally directed.

In making the announcement, VA Administrator Harry N. Walters pointed out that the plan covers just about every geographical area and that the first and overriding concern was "how best to care for and meet the future medical needs of our veterans. I sincerely feel," he went on, "that we have done that." He also stressed that all actions taken to implement the plans will be consistent with existing laws and VA policy. In some instances, approvals by the President and by Congress may be required before implementation.

FEMA Tests New Training Course

What would be the ramifications of a national emergency involving three catastrophic earthquakes in southern California? What should or could be the reaction of government to such an event?

This scenario forms the basis for a new training course put together by the Federal Emergency Management Agency (FEMA) at its Emergency National Institute at Emmitsburg, Md. The course is aimed at executives from business and industry who are part of the National Defense Executive Reserve, a program that recruits and trains experienced civilian executives to serve in key government positions during periods of national emergency.

The course is designed to be the major element in a total training curriculum for reservists that includes follow-up workshops and on-the-job training (OJT). The three-day exercise-based course is structured around the simulated national emergency outlined above. Introduced at the beginning of the course, the emergency scenario unfolds—by special daily newspapers and by newscasts—during the first two course days.

This is interspersed with classroom and small-group work on a variety of topics that concludes with a briefing on the role of reservists in national emergencies, the legal authorities under which they function, the basics of emergency management and policymaking, and public affairs in times of crisis.

Finally, on the third day, events in the emergency scenario culminate in a full-scale emergency exercise, with each reservist playing a role he or she might fill if the incident were real.

Mrs. Betty Foley looks on as her son Kevin reads the plaque at the USAF Museum Freedom Tree. Col. Brendan Foley has been missing in action in SEA since Thanksgiving Day, 1967.

THE BULLETIN BOARD

Unique Father's Day Observance

This past Father's Day a unique observance was held at the US Air Force Museum at Wright-Patterson AFB, Ohio. It was a Father's Day tribute to the servicemen still missing in action *(see photo)*, and it included a flyover in the "missing man" formation.

The event was sponsored by the 906th Tactical Fighter Group (Reserve). It was held at the POW/MIA Freedom Tree, which is on the Museum grounds. The Freedom Tree was donated by the POW/MIA families in the Dayton area in 1972 and was planted by Kevin Foley, son of MIA Col. and Mrs. Brendan P. Foley. Colonel Foley is still missing.

Air Force Concerned About Retiree Deaths

The Air Force Accounting and Finance Center is concerned that many retiree families do not know what to do about the retiree's pay when the retiree dies. This is a normal carryover from active-duty days, when, if an active-duty person dies, a casualty assistance team immediately visits the family—in fact, many times they provide the family the first notification. However, when a retired member dies, the reverse is true.

It is up to the family to notify the Air Force of the retiree's death. AFAFC will immediately stop the retired pay. If the retiree had elected to participate in a survivor benefit plan, action will also begin to start the annuity. Unless these steps are taken, the family could wind up owing Uncle Sam money—something no one wants to see added to the difficult mourning period.

To help, Center officials suggest that all retirees keep the local casualty affairs office and the AFMPC casualty affairs office phone numbers (512-652-5513), along with the Finance Center's toll-free number (1-800-525-0104), with your will. Make sure your family is advised to make the notification quickly. If the government isn't aware—officially—that an individual has died, pay problems can mount quickly.

Short Bursts

A new Medal of Honor commemorative stamp has been issued by the US Postal Service. The stamp depicts the Army, Navy, and Air Force Medals of Honor suspended from the blue neck ribbon. Upcoming before the end of 1983 is a new commemorative recognizing the 100th anniversary of the federal Civil Service.

The Air Force places only two installations in a listing of the **twenty-five most populous military bases.** Lackland AFB, Tex., with a little more than 19,000 assigned, is number eleven, and Keesler AFB, Miss., is number twenty-four. As might be expected, the Army owns the most—sixteen, including the first, Fort Bragg, N. C., with more than 39,000 people. The Navy's San Diego, Calif., base ranks third, boasting almost 35,000 assigned.

TSgt. Robert R. Widger, OJT NCOIC, Patrick AFB, Fla., has been named the **Outstanding USAF OJT Manager of the Year** at command level. The counterpart unit-level award went to **SSgt. James A. Miller,** Suwon AB, Korea.

Film star **Bette Davis** was recently presented the **DoD Medal for Distinguished Public Service.** Miss Davis, founder and first president of the Hollywood Canteen, which served close to 5,000,000 service members during World War II, has remained active in generating community support for service members and veterans.

This year's **National Spelling Bee Champion is Blake Giddens,** an eighth-grader from Chaparral Junior

THE BULLETIN BOARD

High in Alamogordo, N. M. His sister, Nicole, has competed twice in the Nationals. Both are children of Lt. Col. George G. Giddens, 456th Tactical Training Squadron Commander at Holloman AFB, N. M.

The twenty-fifth **USO airport center has opened at Indianapolis** International Airport. USO airport centers service members in transit, providing a place for rest and refreshments or just a friendly place for traveling service people to check into.

"Mr. Air Force Food Service" has retired. **Roger Merwin,** Deputy Director for Housing and Services at the Air Force Engineering and Services Center, Tyndall AFB, Fla., has hung it up after thirty-four years of federal service. He helped design the food service facilities at the Air Force Academy, and, for twenty-seven years, has been closely associated with the Hennessy Award Committee, serving as its Chairman since 1962. The Hennessy Award goes each year to the best Air Force dining hall.

The Air Force bowled its way **to first place** in recent interservice competition with 40,947 pins. The Army was a close second with 39,972 pins.

Last year was the **most profitable in Army and Air Force Exchange Service history.** Net earnings were $203 million, up ten percent from the previous year. Total sales were $4.6 billion. Of each dollar spent by the Exchange customer, roughly seventy-two cents goes for retail merchandise, nine cents is spent for gasoline, eight cents in such concession machines as video games, seven cents for food, three cents in gum and candy vending machines, and one cent for motion pictures.

Like the Air Force, **the Army has appointed a new top enlisted advisor.** The latest Sergeant Major of the Army is forty-seven-year-old Command Sergeant Major **Glen E. Morrell.** The West Virginian has had seven overseas tours during his twenty-eight years of service, including three in Vietnam. ■

SENIOR STAFF CHANGES

PROMOTIONS: To be **Lieutenant General:** Bruce K. **Brown;** Leo **Marquez.**

RETIREMENTS: B/G Stanford E. **Brown;** L/G Lynwood E. Clark; L/G Richard E. **Merkling;** B/G Attilio **Pedroli;** M/G Graham W. **Rider;** M/G Joseph D. **Zink.**

CHANGES: M/G (L/G selectee) Bruce K. Brown, from Vice CINC, Hq. NORAD, Peterson AFB, Colo., to Cmdr., Hq. AAC, & Cmdr., Alaskan NORAD Region, Elmendorf AFB, Alaska, replacing retired L/G Lynwood E. Clark . . . **B/G Larry D. Dillingham,** from Dep. Dir., Nat'l Mil. Command Ctr. (#1), J-3, OJCS, Washington, D. C., to Dep. Dir., Current Ops., J-3, OJCS, Washington, D. C. . . . **Col. (B/G selectee) Michael D. Hall,** from Cmdr., 6510th Test Wg., AFSC, Edwards AFB, Calif., to Dep. Dir., Defense Test & Eval., Office of the Under Sec. of Def. for Research & Engineering, OSD, Washington, D. C. . . . **M/G (L/G selectee) Leo Marquez,** from Cmdr., Ogden ALC, AFLC, Hill AFB, Utah, to DCS/L&E, Hq. USAF, Washington, D. C., replacing retired L/G Richard E. Merkling.

B/G Robert P. McCoy, from DCS/M&P, Hq. AFLC, Wright-Patterson AFB, Ohio, to DCS/Maintenance, Hq. AFLC, Wright-Patterson AFB, Ohio, replacing M/G Monroe T. Smith . . . **M/G Robert E. Messerli,** from DCS, Hq. PACOM, Camp Smith, Hawaii, to Ass't DCS/P&R, Hq. USAF, Washington, D. C., replacing M/G (L/G selectee) Edgar A. Chavarrie . . . **B/G (M/G selectee) Maurice C. Padden,** from Dep. Dir., Ops., Nat'l Mil. Command Sys., J-3, OJCS, Washington, D. C., to Vice Dir., J-3, OJCS, Washington, D. C.

M/G Marc C. Reynolds, from Cmdr., AFALD, Hq. AFLC, Wright-Patterson AFB, Ohio, to Cmdr., Ogden ALC, AFLC, Hill AFB, Utah, replacing M/G (L/G selectee) Leo Marquez . . . **M/G Monroe T. Smith,** from DCS/Maintenance, Hq. AFLC, Wright-Patterson AFB, Ohio, to Cmdr., AFALD, Hq. AFLC, Wright-Patterson AFB, Ohio, replacing M/G Marc C. Reynolds.

SENIOR ENLISTED ADVISOR CHANGES: CMSgt. Jerry L. Becker, to SEA, Hq. AFLSC, Washington, D. C., replacing CMSgt. Thomas R. Castleman . . . **CMSgt. Jan C. Boyd,** to SEA, Hq. SAC, Offutt AFB, Neb., replacing CMSgt. Sam E. Parish . . . **CMSgt. Bernard E. Carbon,** to SEA, Hq. ANG, Washington, D. C., replacing CMSgt. Lynn E. Alexander.

CMSgt. Robert W. Carter, to SEA, Hq. ATC, Randolph AFB, Tex., replacing CMSgt. Frank T. Guidas, Jr. . . . **CMSgt. Larry E. Fowler,** to SEA, Hq. AU, Maxwell AFB, Ala. . . . **CMSgt. Michael K. Thompson,** to SEA, Hq. AFAFC, Denver, Colo., replacing CMSgt. Edwin J. Remmert . . . **SMSgt. David E. Smith,** to SEA, Hq. AFSINC, Kelly AFB, Tex., replacing CMSgt. Louis M. Nicolucci. ■

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For further information, contact Jim McDonnell or Dottie Flanagan at 202-637-3300.

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AFA Intercom

Scott Memorial and St. Louis Chapters Host The Mid-America Ball

AFA's Scott Memorial Chapter and Spirit of St. Louis Chapter teamed up again this year to sponsor the Air Force Ball of Mid-America. This year's Ball, whose theme was "Believe It or Not, We Can Fly," was held in June at the Stouffer's Riverfront Towers in St. Louis, Mo. Many of the more than 500 guests reported that this year's Ball was even better than last year's inaugural gala.

The program for the evening was highlighted by a salute to recently retired MAC Commander in Chief Gen. James R. Allen. In recognition of his thirty-five years of service to the nation, AFA presented General Allen with an AFA Life Membership and contributed $1,000 in his name to the Aerospace Education Foundation's Jimmy Doolittle Educational Fellowship program.

Proceeds from the Ball, whose honorary chairman was G. Duncan Bauman, publisher of the St. Louis *Globe-Democrat*, will benefit AEF and the James S. McDonnell USO facility at Lambert St. Louis International Airport. It is expected that this year's contribution will exceed the $20,000 netted at last year's Ball.

Among the special guests for the evening were AFA National President David Blankenship and his wife Joan; Dr. Alan M. Lovelace, corporate vice president with General Dynamics Corp., and his wife Kathie; John T. Tucker, president of Midcoast Aviation Services, Inc., and his wife Lucy; William E. Maritz, President of Maritz, Inc., and his wife Phyllis; Gen. Jack Catton, USAF (Ret.), and his wife Jo Beth; Maj. Gen. Robert F. McCarthy, USAF, AFCC Commander, and his wife Beverly; Lt. Gen. Robert F. Coverdale, USAF, MAC Vice Commander in Chief, and his wife Norma; and General Allen and his wife Kitty.

The 1983 Air Force Ball of Mid-America was highlighted by a salute to recently retired MAC Commander in Chief Gen. James R. Allen. Proceeds from the Ball benefit the Aerospace Education Foundation and the James S. McDonnell USO facility at Lambert St. Louis International Airport. Among the special guests were (standing, from left): AFA National President and Mrs. David L. Blankenship, Gen. and Mrs. Jack Catton, (seated, from left): Mr. and Mrs. William E. Maritz, General and Mrs. Allen, and AFA Executive Director and Mrs. Russell E. Dougherty. See item.

Enlisted Appreciation

Dear AFA:

On behalf of the enlisted men and women of Military Airlift Command, and especially Scott AFB, Ill., I want to thank the Air Force Association for the Air Force Ball of Mid-America. This was the second, and most successful to date. I especially want to thank Mr. Hugh Enyart, President of the Scott Memorial Chapter, for his recognition of the enlisted members of AFA.

It was gratifying to me and I know to General Allen to see so many enlisted people in attendance at the Ball. If we are to continue to successfully recruit and keep enlisted members in AFA, I think it is vital that they share the experience of the symposia and other special AFA events along with the officer membership. AFA's Scott Memorial Chapter, thanks to Mr. Enyart, has set the pace for AFA in this regard.

CMSgt. Harry E. Davis
Senior Enlisted Advisor, MAC

AFAer Tells Story of Historic, Long-Distance Flight by B-29 Trio

This September marks the thirty-eighth anniversary of a significant long-distance flight by three B-29 crews of Twentieth Air Force. That was the nonstop flight from Hokkaido in northern Japan to Chicago, where the aircraft landed on September 19, 1945.

Highlights of the mission are told by J. Ivan Potts, Jr., an AFA member from Shelbyville, Tenn., then a lieutenant and pilot of the number two airplane. The mission was led by Lt. Gen. Barney Giles, Deputy Commander of the US Army Strategic Air Forces in the Pacific. He flew aboard the number one aircraft. Number three aircraft carried Brig. Gen. Emmett O'Donnell, then Commander of the 73d Bomb Wing, and its crew. Ivan Potts and the crew of number two were led by Maj. Gen. Curtis E. LeMay, then Chief of Staff of the US Army Strategic Air Forces in the Pacific.

Potts says, "After an evaluation of every airplane in the group, our B-29-75—number 44-70015 of the 44th Bomb Squadron—was finally selected because of its record for low fuel consumption and overall reliability.

"On Guam, all three planes were modified for the nonstop attempt. Five 600-gallon tanks were installed in the bomb bays. Everything was stripped that was not absolutely necessary for the flight, including guns and turrets. The blisters atop and on the sides were

The crew of the number two aircraft at Tinian, September 13, 1945 (standing, from left): Capt. William W. Townes, 1st Lt. Stephen T. Jones, Maj. John F. Wedding, Lt. Col. William C. Kingsbury, Capt. Theodore R. Finder, 1st Lt. John C. Eiland, and 1st Lt. J. Ivan Potts, Jr.; (kneeling): SSgt. Jerome A. School, SSgt. Frank A. Klas, Jr., Sgt. B. T. Freeman, and Sgt. R. F. Fisher. Missing from the photo was MSgt. Henry J. Rutowski. Sergeants Freeman and Fisher were replaced by General LeMay and Colonel Blanchard, who joined the crew at Guam. (Photo courtesy of J. Ivan Potts, Jr.)

replaced by square flush windows. The 40th Group markings were removed, leaving a solid silver bird waxed and polished to an almost new finish. The only marking remaining was our Air Force star. Then a new tail insignia was installed, the emblem of the Twentieth Air Force."

After being prepared for the flight, which was intended to go nonstop from Hokkaido to Washington, the three aircraft were ferried from Guam to Hokkaido and readied for takeoff on September 18.

Potts continues, "We were awakened long before dawn to make final preparations for takeoff. Far in the north, Super Dumbos and Dumbos, B-29s and B-17s equipped for air/sea rescue, were standing alert. They would take off instantly on word that any of our three US-bound planes were in trouble.

The number two B-29 at Hokkaido. See item. (Photo by J. Ivan Potts, Jr.)

"General LeMay decided Lt. Col. William C. Kingsbury would get the plane airborne. We had 10,000 gallons of gasoline on board. Gross weight was 144,000 pounds, the heaviest overload ever attempted in a B-29 until then.

"Colonel Kingsbury ran the throttles forward. There was no room for error or malfunction. We were so heavily loaded that if one of our four engines failed or partially lost power we would have crashed. We used up all 8,200 feet of the runway before finally lifting off. Our climb was gentle and slow, partly to conserve fuel, and also because of the excessive weight."

After several hours en route, crews of the three aircraft realized that they were bucking headwinds instead of getting a free push from the high-velocity winds of the newly discovered jet stream. Even after crossing the Bering Sea and escaping the effects of a Pacific typhoon, they continued to encounter headwinds.

Potts continues, "Over Northway, Alaska, reported navigator Bill Townes. 'It occurred to me that we were not on schedule and had been bucking much stronger headwinds since we left Fairbanks. When I reported that fact to General LeMay, he looked at me as if he thought it was my fault, so I retreated behind the bulkhead to check my figures.'

"By 9:00 a.m. Eastern War Time on September 19, we were 370 miles southeast of White Horse in the Yukon and sunlight was visible in the east. Sleep had been virtually impossible. We were now seventeen hours into the flight.

"We had been buffeted by unpredicted headwinds ever since we passed over Nome. As we crossed the Canadian border, General LeMay reported later that we began to hit the 'stinkingest stuff' of the whole trip.

"After conferring over the radio, General Giles decided to have all three aircraft land in Chicago."

The number two B-29, commanded by General LeMay, was using less fuel than the others.

Potts says, "Capt. Theodore Finder, the flight engineer, and Bill Townes, the navigator, estimated we had enough gasoline to make Washington, but with only fifteen minutes' reserve. If Washington had bad weather or for any reason we had to make two passes at the field, we would have to bail out. General LeMay then decided to return to Chicago and stay with the other planes. Our plane was the last to give up the nonstop attempt to Washington."

After refueling in Chicago, the aircraft pressed on to Washington, reaching National Airport in late evening, September 19.

Potts concludes, "This was the way one national correspondent reported our arrival: 'The silvery sky giants, manned by their blue-ribbon crews, which had streaked across Alaska and Canada on the homeward leg of their ambitious mission, roared over Nation-

Reuniting at last year's 40th Bomb Group reunion were (from left) J. Ivan Potts, Jr., William W. Townes, Gen. Curtis E. LeMay, and Theodore R. Finder. See item. (Photo by Harry M. Changnon)

al Airport in formation at 9:30 p.m. Eastern War Time.'

"General Giles landed at 9:52 p.m., General LeMay at 9:54 p.m., and, finally, General O'Donnell at 9:56.

"The reception in Washington was fantastic. When we landed thousands of people stood behind the fences at the ATC terminal. General LeMay wouldn't deplane until he had implanted a fresh cigar in his mouth. As we alighted, the eighty-piece Air Force Band struck up our beloved 'Air Force March.'

"A press conference was held the following morning. Virtually all the questions by the reporters at the press conference were put to General LeMay. He used the time to emphasize the significance of the flight in reverse. 'Now that we have proved we can do it, we must remember that any future enemy will also be able to do it.'

"He reported that we had averaged 236 mph and commented on the strong headwinds, the fact that they were encountered 3,000 miles from Chicago, and that the trip had covered 6,509 miles.

"General LeMay stated, 'When we took off from Hokkaido we had a little headwind and expected it. However, all our information indicated that once we passed Fairbanks it would drop. We didn't need a tailwind. All we needed was a nice normal wind to arrive on schedule. The buffeting headwind averaged seventy mph.'

"He went on to add, 'This trip proved a lot. The B-29 Superfort went right from the drawing board into battle without any real test as to what it could or could not do. We found out that the B-29 can and will perform beautifully on long-range trips, belligerent or otherwise.'"

The crew leaders of the three aircraft met with Gen. H. H. Arnold after completion of the historic flight. Pictured above are (from left) Maj. Gen. Curtis E. LeMay, Brig. Gen. Emmett O'Donnell, General Arnold, and Lt. Gen. Barney Giles. See item.

Unit Reunions

Air Weather Service Ass'n
The Northern California Air Weather Service Association will meet on October 8, 1983, for its annual banquet at Moffett Field, Calif. All former AWS personnel are welcome. **Contact:** Milt Sipple, 2589 Dumbarton Ave., San Jose, Calif. 95124. Phone: (408) 267-2555.

Ardmore AAF, Okla.
Personnel assigned to the Ardmore Army Airfield (1942–46) will hold a reunion on September 23–24, 1983, at the Holiday Inn in Ardmore, Okla. **Contact:** Hamilton Post, 998 Locust Ave., Washington, Pa. 15301.

Eagle Pass Army Airfield
The Eagle Pass Army Airfield fortieth year reunion will be held in Eagle Pass, Tex., on November 11–13, 1983. **Contact:** Cliff Overcash, 2501 Parkview Dr., Suite 300, Fort Worth, Tex. 76102. Phone (817) 335-4555.

Eagle Pass WASPs
The Eagle Pass WASPs will hold their thirty-nine-year reunion on November 11–13, 1983, in Eagle Pass, Tex. **Contact:** Col. Hal Bundy, USAF (Ret.), 1612 Air Force Village, 4917 Ravenswood Dr., San Antonio, Tex. 78227. Phone: (512) 673-1307.

Ranch Hands
The Vietnam Ranch Hands' seventeenth annual reunion will be held in Fort Walton Beach, Fla., on October 14–16, 1983. **Contact:** Jack Spey, 850 Tarpon, Fort Walton Beach, Fla. 32548. Phone: (904) 243-5696.

Tactical Fighter Reunion
The Tactical Fighter reunion will be held on September 30–October 1, 1983, at the Union Plaza in Las Vegas, Nev. **Contact:** Col. Floyd "Buckshot" White, USAF (Ret.), P. O. Box 19072, Las Vegas, Nev. 89132.

Westmoreland County Air Show
The eighth Westmoreland County Air Show will be held at the Latrobe Airport in Latrobe, Pa., on September 24–25, 1983. World War II fighters and bombers of the Confederate Air Force of Harlingen, Tex., and the US Army "Golden Knights" parachute team will be featured during the show. **Contact:** Lenny Bughman, Westmoreland County Airport Authority, R. D. 1, Box 396, Latrobe, Pa. 15650. Phone: (412) 539-3110.

Class 38-C
Members of Randolph AFB, Tex., Flying Class 38-C will hold their forty-fifth re-

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CMSgt. James Binnicker
(ex officio)
Chairman, Enlisted Council
Randolph AFB, Tex.

Capt. John Loucks
(ex officio)
Chairman, JOAC
USAF Academy, Colo.

Robert Gass
(ex officio)
National Commander
Arnold Air Society
Los Angeles, Calif.

AFA Intercom

union on October 3–7, 1983, at Randolph AFB, Tex. **Contact:** Doug Courtney, 5841 Winding Ridge Dr., San Antonio, Tex. 78239. Phone: (512) 654-1932.

40th Bomb Group Ass'n
The 40th Bomb Group Association will be holding its fourth reunion on September 23–25, 1983, in Dayton, Ohio. **Contact:** Ira V. Matthews, 1805 N. Indian Creek Dr., Mobile, Ala. 36607.

Class 43-K
A reunion for the "Yanks" of Class 43-K, No. 3 Branch Flying Training School, Miami, Okla., will be held on September 16–17, 1983, in San Diego, Calif. **Contact:** Lt. Col. Harold A. Jacobs, USAF (Ret.), 17545 Drayton Hall Way, San Diego, Calif. 92128. Phone: (619) 485-5041.

P-47 Thunderbolt Pilots
A reunion for the Western P-47 Pilots will be held on October 28–30, 1983, at Edwards AFB, Calif., in conjunction with the Edwards AFB Golden Anniversary Open House. **Contact:** Harvey Victor, 22110 Victory Blvd., Suite 314, Woodland Hills, Calif. 91367. Phone: (213) 347-8150. Chuck Dahlin, 10654 Art St., Sunland, Calif. 91040. Phone: (213) 767-6437.

303d Bomb Wing (Tucson) Ass'n
The 303d Bomb Wing annual reunion will be held on October 29–30, 1983, in San Diego, Calif. **Contact:** Newton Chaney, 292 Sea Vale St., Chula Vista, Calif. 92010. Phone: (619) 426-4624.

354th Fighter Group
The 354th "Pioneer Mustang" Fighter Group will hold a reunion on October 6–9, 1983, at the Marriott Hotel North, San Antonio, Tex. **Contact:** 354th Fighter Group Association, P. O. Box 68123, Indianapolis, Ind. 46268. Phone: (317) 872-6010.

381st Bomb Group
The 381st Bomb Group will hold its Memorial Association's sixth annual reunion on October 21–23, 1983, in San Antonio, Tex. **Contact:** T. Paxton Sherwood, 515 Woodland View Dr., York, Pa. 17402.

452d Bomb Group
Members of the 452d Bomb Group will hold their reunion on October 20–23, 1983, in Reno, Nev. **Contact:** Rom Blaylock, P. O. Box 2526, New Bern, N. C. 28560.

482d Bomb Group
Veterans of the 482d Bomb Group, stationed in Alconbury, England, during World War II, including the 36th, 812th, 813th, and 814th Bomb Squadrons and attached units, will rendezvous in conjunction with the 8th AFHS in Houston, Tex., on October 12–16, 1983. **Contact:** Denny Scanlan, One Scanlan Plaza, St. Paul, Minn. 55107.

486th Bomb Group
A minireunion for the 486th Bomb Group, including the 832d, 833d, 834th, and 835th Bomb Squadrons and all attached organizations, will be held in conjunction with the 8th AFHS on October 12–16, 1983, in Houston, Tex. **Contact:** Robert H. Nolan, 2676 Augusta Dr., N., Clearwater, Fla. 33519. Phone: (813) 784-9661.

505th Bomb Group
A minireunion for the 505th Bomb Group

AFA National President David L. Blankenship presented AFA awards at the recently completed SAC Missile Competition at Vandenberg AFB, Calif. LEFT: Accepting the Best Titan Operations award for the 381st Strategic Missile Wing, McConnell AFB, Kan., was 1st Lt. Bonnie J. Schaefer. RIGHT: Accepting the Best Minuteman Operations award for the 351st Strategic Missile Wing, Whiteman AFB, Mo., was Lt. Col. Daniel L. Morgan.

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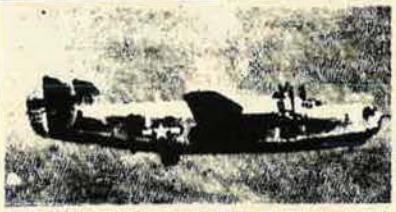

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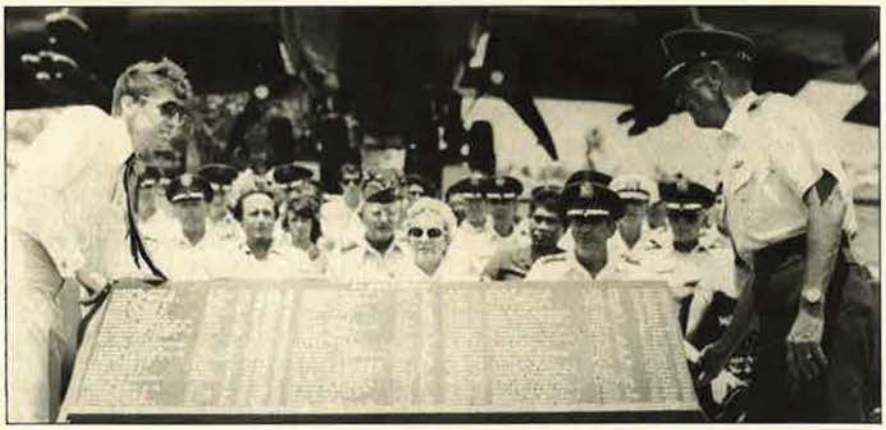

During a recent visit to Andersen AFB, Guam, SAC CINC Gen. Bennie L. Davis, right, assisted Allen A. Pickens, President of AFA's Arc Light Chapter, in unveiling a bronze plaque honoring SAC airmen who lost their lives in Southeast Asia. The plaque, provided by the Arc Light Chapter, now rests in front of the Arc Light Memorial at Andersen AFB.

(B-29s) will be held on October 28–30, 1983, at the Ramada Inn, Fort Walton Beach, Fla. **Contact:** Herbert C. Bush, 212 Marshall Dr., N. E., Fort Walton Beach, Fla. 32548.

557th Bomb Sqdn. Ass'n

Members of the 557th Bomb Squadron, 387th Bomb Group, will hold their reunion on October 21–23, 1983, at the Terrace Garden Inn, Atlanta, Ga. All former members of the 556th, 558th, and 559th Bomb Squadrons are invited. **Contact:** R. C. "Bob" Allen, 9215 Cherokee Pl., Leawood, Kan. 66206. Phone: (913) 649-6606.

Laughlin AFB, Tex.

I would like to hear from all former members of the Laughlin AFB Youth Center (1971–1976) who would be interested in a reunion in Del Rio, Tex.

Please contact the address below.

Lee Ivers
579 Altura Dr.
Perris, Calif. 92370

Phone: (714) 657-7001

Whitetail Marauders

I am trying to locate World War II USAAF veteran pilots, navigator-bombardiers, aircrew members, and ground support personnel who operated in the ETO with the B-26 Marauder medium bomber with the 455th Bomb Squadron, 323d Bomb Group, Ninth Air Force.

We now have four active bomb squadron associations, and we would like to hear from vets of other B-26 bomb groups.

Inquiries should be sent to the address below.

R. M. Wefel
114 Fontana Dr.
Oxnard, Calif. 93033

At a recent meeting of AFA's Charles A. Lindbergh Chapter in Stamford, Conn., Sen. Barry M. Goldwater (R-Ariz.), right, was presented a ceramic replica of the famed Spirit of St. Louis *aircraft. Making the presentation was Alton G. Hudson, President of the Lindbergh Chapter.*

Class 41-C

I would like to hear from former members of Pilot Class 41-C (Stockton Field, Calif.) about plans for a reunion.

Please contact the address below for details.

Jack D. Beckelman
9578 Sims, Apt. D-13
El Paso, Tex. 79925

Class 42-14

I would like to hear from members of the Bombardier Class 42-14, Victorville Army Flying School, for the purpose of planning a reunion for October 10, 1983.

Please contact the address below.

Lee J. Lockwood
1440 Sherwood Forest Blvd.
Baton Rouge, La. 70815

86th Transport Sqdn.

Attention, former members of the 86th Transport Squadron, 27th ATG, stationed at Heston and Villacoublay: If interested in a reunion, please contact the address below.

Sarkis Samarian
18442 Magnolia
Southfield, Mich. 48075
Phone: (313) 569-8078

92d Bomb Wing

Attention, members of the 325th, 326th, and 327th Bomb Squadrons, 92d Bomb Wing: Let's have a reunion!

For further details, please contact the address below.

R. K. Wright
2285 Capurro Way
Sparks, Nev. 89431

During a Salute to the Armed Forces held recently at Sea World in Florida, Air Force Secretary Verne Orr, second from right, joined Louis Kriebel, left, President of AFA's Central Florida Chapter, and Martin Harris, right, AFA National Director, in presenting an AFA Citation to Eastern Air Lines. Accepting the Citation was Harry Kerns, Eastern's Manager of Sales. An AFA Citation was also presented to Sea World, which, along with Eastern, sponsored the Salute.

434th TFTS/TFS

The 434th Tactical Fighter Training Squadron "Red Devils," currently stationed at Holloman AFB, N. M., will hold a reunion to celebrate its fortieth anniversary on October 29, 1983, at the Holloman AFB Officers' Club.


A.


B.


C. D.

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Col. Walter G. Vartan, USAFR, was recently elected national president of the Reserve Officers Association. Colonel Vartan is Illinois State AFA Vice President.

Former members may contact the address below.

Capt. Haldon D. Lewin, USAF
3002 Del Prado
Alamogordo, N. M. 88310
Phone: (505) 437-6235

769th AC&WS

I would like to hear from former members of the 769th Aircraft Control and Warning Squadron for the purpose of forming an association.

Please contact the address below.

Joe Dessez
3362 Breton Circle, N. E.
Atlanta, Ga. 30319
Phone: (404) 252-1113

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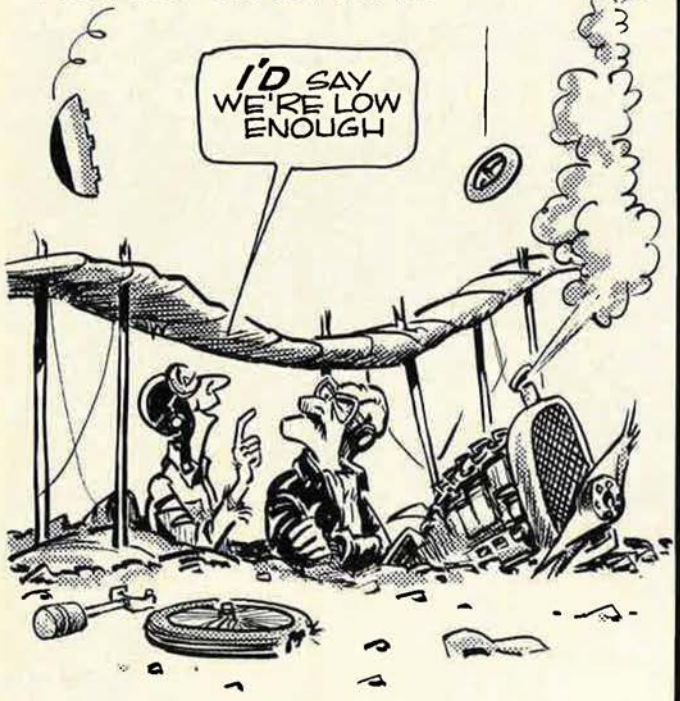
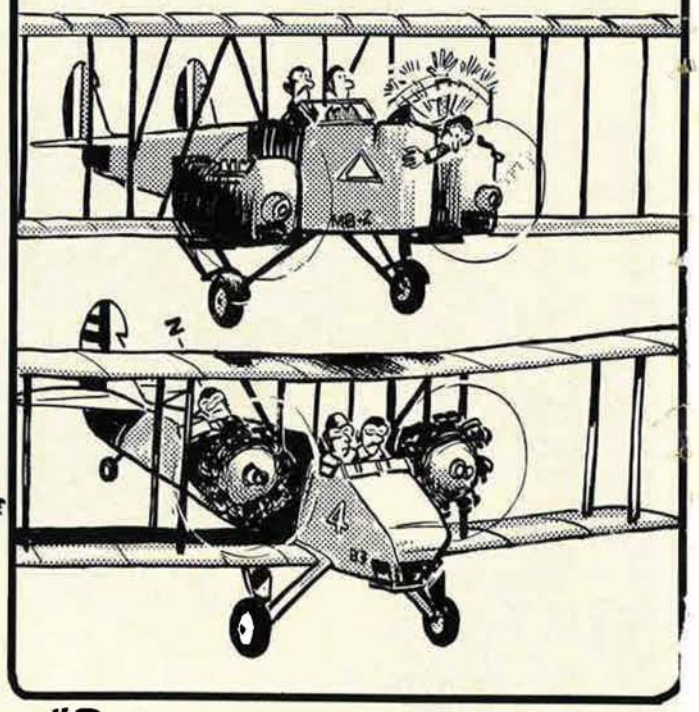
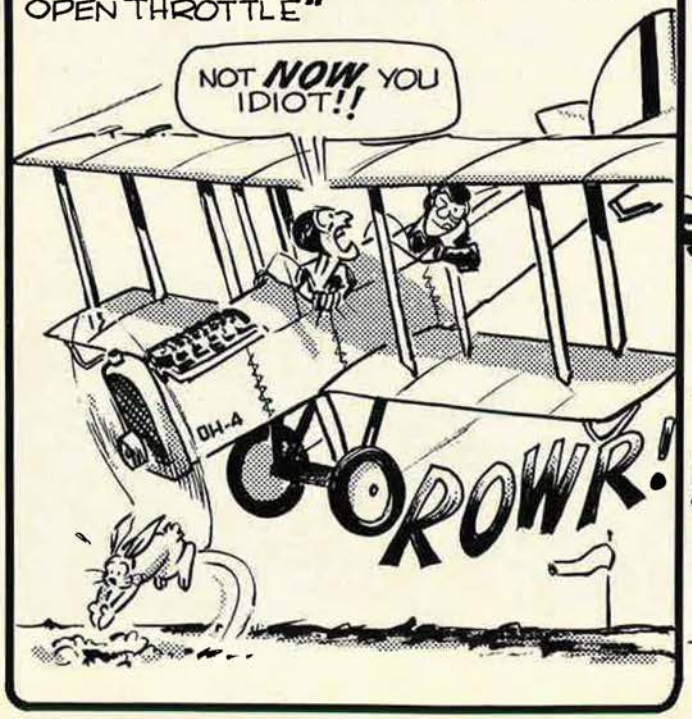


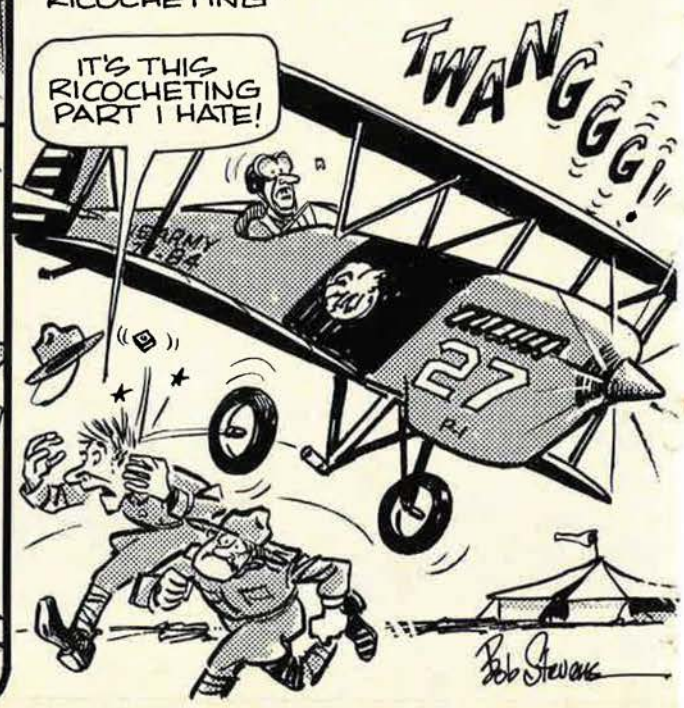
"BEFORE YOU BEGIN A LANDING GLIDE SEE THAT NO MACHINES ARE UNDER YOU"



"MOTORS HAVE BEEN KNOWN TO STOP DURING A LONG GLIDE, IF PILOT WISHES TO USE MOTOR FOR LANDING, HE SHOULD OPEN THROTTLE"



"DON'T ATTEMPT TO FORCE MACHINES ONTO THE GROUND WITH MORE THAN FLYING SPEED, THE RESULT IS BOUNCING & RICOCHETING"



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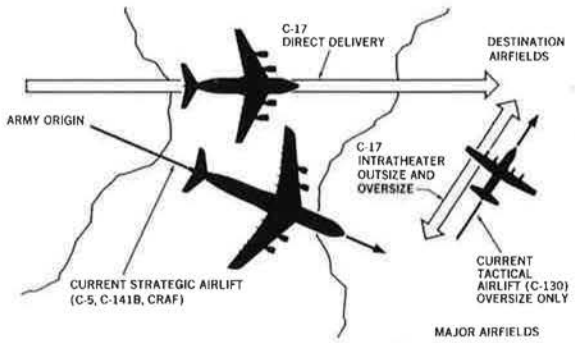

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