

MARCH 1971 / \$1


AIR FORCE

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MAGAZINE

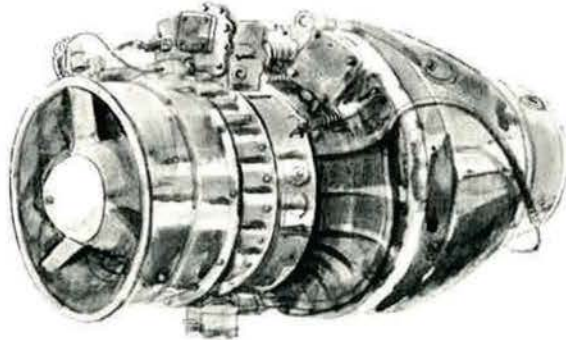
Ten
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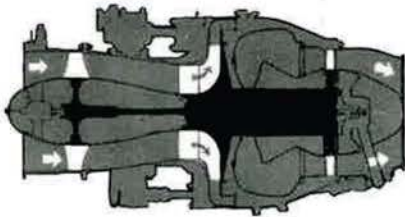


A Minuteman III test vehicle, ninety-first and last of the test series, leaves Cape Kennedy, Fla., on December 14, 1970, just six weeks before the tenth anniversary of the first test firing of a Minuteman, on February 1, 1961.

The little engine that could.*



Most people in the turbine engine business agree on one point. When you can make an engine grow—by modifying and improving it—that's when really significant economies can be realized.



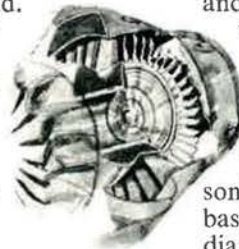
Of course, if you want an engine to grow, it's nice to begin with a design that's worth modifying in the first place.

And that brings us to the Teledyne CAE J69-T-29 engine. The T-29 is a basic small turbine engine. 1700 pounds of thrust at sea level. Exceedingly low in cost. A workhorse that powers the tri-service subsonic BQM-34A. The J69-T-29 is a very simple engine.

And, of course, that's one of the reasons we could make it grow into the YJ69-T-406. The T-406 is the engine used in the Navy/Air Force supersonic BQM-34E/F target drones. It will fly a bird at Mach 1.1 on the deck and Mach 1.5 at 60,000 feet. With a thrust of 1920 pounds at sea level.

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And, by adding a high flow axial compressor, speeds can be increased to Mach 2.2, thrust from 2350 to 2470 pounds. Add an afterburner and the T-406 in

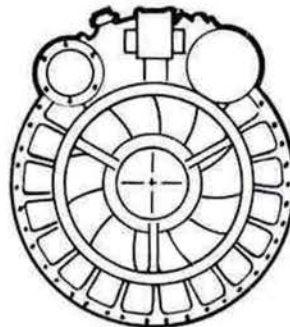
the BQM series supersonic drones can achieve speeds of Mach 2.5. And then some.

All of these advances —1700 to 2470 pounds of thrust, subsonic to Mach 2.5—grew from the basic J69-T-29. And, the basic engine diameter hasn't changed.

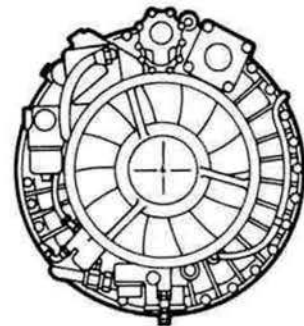
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Before



1700 LBS. THRUST



After

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AIR FORCE

MAGAZINE

VOLUME 54, NUMBER 3

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MARCH 1971

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THIS MONTH'S COVER . . .

Symbolizing the decade of deterrence made possible by USAF's Minuteman, our cover shows the launch from Cape Kennedy, Fla., on December 14, 1970, of the last Minuteman III test vehicle. The launch occurred six weeks before the tenth anniversary of the first Minuteman test launch from the Cape.



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Facing the Drug Problem

Gentlemen: I read with interest the very excellent article written by Mr. William Leavitt in your January 1971 issue entitled "Meeting the Drug Challenge."

The article was meaningful and timely and expressed the concern that all of us share in attempting to solve the national problem. . . . My personal thanks for a job well done.

MAJ. GEN. JOHN B. KIDD, DIR.
Directorate of Personnel Planning
OCS, USAF
Washington, D.C.

Gentlemen: . . . one of the most cogent pieces I have seen. . . .

The Defense Department position on drug abuse [is] an extraordinary step up in the whole country's attitude toward the problem, and from a very unexpected quarter. I hope that, as an intermediary position, the DoD position does not prove futile. It provides a good lever with cynical cops who, tending to idealize the armed forces, are impressed by the idea that there might be a "right" attitude other than punitive and stigmatizing.

I personally take a very optimistic and idealistic overview of the drug problem: that drugs, as a new social problem, will be solved in such a way as to provide a model for the solution of long-standing problems such as alcoholism, criminality, and the pathological behaviors.

Until recently, I have believed that the "front lines" were the street programs such as I work in. But I'm going to investigate DoD practices and what the large corporations are doing; the policies, at least, are much more enlightened than the general "treatment" attitudes, which remain, by and large, subtly punitive.

I hope there can be more communication between street programs and the military geniuses of policy, whoever they may be. . . .

There is a complex relationship between treatment and societal attitudes. The DoD has taken a major step in the area of attitude, which makes treatment more practicable.

It may be that we will come to see the drug problem as a mere conservative resistance to a new technology. It may be that we will learn to laugh at ourselves for attempting to "stamp out" the utilization of a technology we ourselves discovered, as well as at at-

tempts to aggrandize the nature of "misuse" as a cover for the inability to absorb fruitfully our own products and artifacts. . . .

WILLIAM E. BATHURST
Drug Treatment Program
Haight-Ashbury Medical Clinic
San Francisco, Calif.

Gentlemen: As a twenty-two-year old caught up in the supposed "youth explosion," I felt I had to write praising an excellently written article on a very relevant subject, not only to the youth but also to the generation-gap-oriented general public. I'm speaking of William Leavitt's article. . . . To say that an article with such an honest and unbiased approach is a welcome sight must surely be an understatement. It's a godsend. The young people today don't want a lot of hogwash. They want factual information that let's them make up their own minds, not a lot of rubbish that makes up their minds for them. That's why the "instant experts" get laughed at. Why young people scoff at this technique should have been plain long ago. Gone are the days when youth would be willing to listen to "death-dealing" marijuana lectures, and the insight of the USAF 3320th Retraining Group is nothing short of fantastic. By being honest, headway *can* and *will* be made.

In Mr. Leavitt's article, nothing but the facts and honest opinions were used. Too often we see the sensational media taking hold of the public eye. The "put-the-dope-fiend-in-jail" routine was a major contributor to misconceptions in the public mind, and sadly, these misconceptions still exist. The Defense Department's new 1300.11 directive is quite a comfort. To know that *somebody* is starting to deal with the drug problem (even if it is on a sort of fraternal, corps-by-corps basis) in a very settling manner is, once again, being honest and factual. . . .

The inclusion of the "Primer on Drugs" from the Boston *Globe* gave the article an even further relevance. Too many parents simply don't know beans about drugs, and neither do most of the instant experts. Both of these groups can and should benefit from such a glossary. However, there is an error in the definition of cocaine. Cocaine, in the "Primer," on page 32, is described as being derived from *cocoa* leaves. So, before Her-

shey's chocolate stock drops, it's important to record that cocaine is derived *not* from cocoa leaves but rather from *coca* leaves. As an interesting sidelight, the coca bush, *erythroxylon coca*, grown in the mountainous regions of Bolivia, Peru, and Java, is still used by the Andean region Indians of South America. It is, interesting, too, that the free world's most popular soft drink derived its name from the extract from the coca bush's leaves, originally used as an ingredient in this cola. Legislative action in 1904 proscribed such use. But the coca name persisted even after caffeine replaced the coca extract in the formula. Coca extract was also infused into the wines of one Angelo Mariani of Paris in the nineteenth century and the resultant *vin coca mariana* was a popular beverage.

The only shortcoming of Mr. Leavitt's article was that no bibliography of related material on drugs was included. With that in mind, I'd like to suggest to readers a most informative book, *Drugs from A to Z: A Dictionary*, by Richard R. Lingeman (McGraw-Hill, paperback, \$2.95). It presents subculture terminology with appropriate excerpts from other related text—well worth the money. . . .

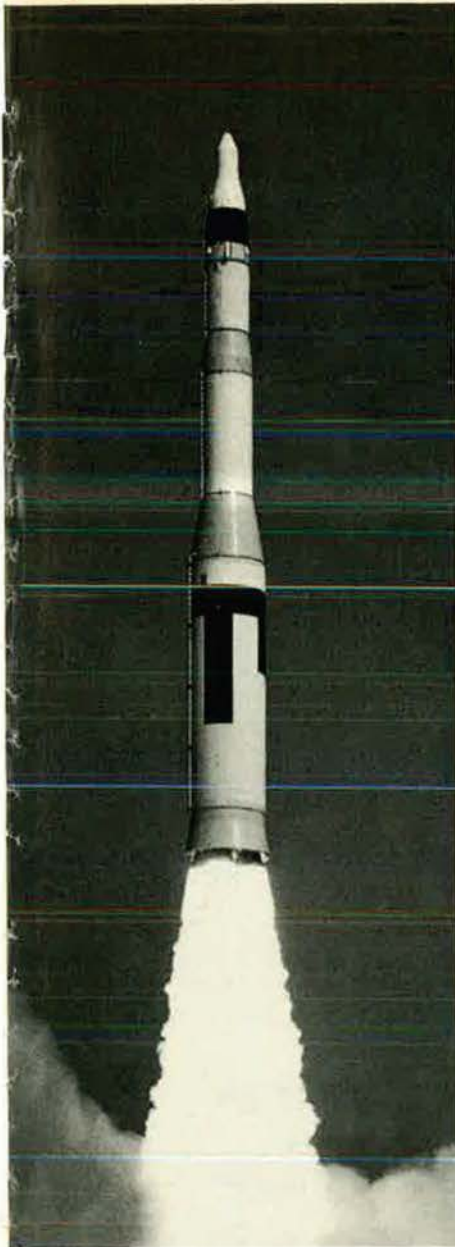
Once again, my thanks to Mr. Leavitt and to AIR FORCE Magazine for an article that everyone, in or out of uniform, should have a copy of.

LEWIS F. MILLS, JR.
Washington, D.C.

Secret of Reticence

Gentlemen: In the December '70 editorial, "Silence Isn't Always Golden," Mr. Frisbee's reasonable question as to why the Air Force has not equitably submitted professional literature for publication is answered partially in the same issue in the article by General Holloway, "The Telling Is as Important as the Doing." Much of the "positive information" which could be released is never cleared for publication because of possible classified implications. Any hint of levied requirements, system capabilities, or program interfaces, are easier to consider classified than to edit or release.

If the statements from several unclassified sources are analyzed together, in a professional manner, the resultant article probably threatens national security. An article written by Mr. Frisbee would arouse less con-



Minuteman: A decade of deterrence.

February 1 marked the tenth anniversary of the first launching of a Minuteman intercontinental ballistic missile at Cape Kennedy. It was the most successful first flight in U.S. missile history.

In 1962 the first Minuteman units were declared operational. Since then they have been the U.S. Air Force's major strategic missile system—and one of this nation's prime deterrent forces.

A Force Modernization program replaced earlier models with the advanced Minuteman II in 1966. The larger "II" had greater range and accuracy and an improved guidance system.

Minuteman III, with even more accuracy and a new re-entry

system, is now being deployed.

As integrating contractor on Minuteman, The Boeing Company's responsibilities have included assembly and manufacturing, test, training, and base installation. Boeing has delivered all Minuteman wings on or ahead of schedule.

The Minuteman weapon system is characterized by high reliability, great survival capability, maximum simplicity, fast reaction time, and improved cost effectiveness.

Boeing is proud to be part of the Air Force team on the highly successful Minuteman program.

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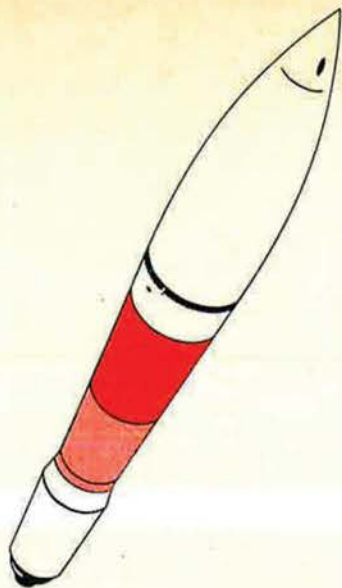


champions don't just happen Competition in the aerospace industry is fast paced. We know because we set the pace when we started the business of practical rocketry. To be crowned the victor you must win competitively with best products and the greatest reliability. We offer championship performance.



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first in solid rocketry, in all ways.



minuteman's middlemen

second and third
stages by aerojet solid
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As Minuteman celebrates its tenth anniversary, we share the pride. The most advanced solid rocket motors ever deployed are the Air Force Minuteman's second and third.



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A DIVISION OF AEROJET-GENERAL

Airmail

trovery than the same article authored by an active-duty officer or airman "in the know."

I had often wondered why so many high-ranking officers published their professional thoughts only after retirement. After an attempt to obtain clearance for a 1,000-word abstract of a paper and accompanied speech on the subject "US Space Defense System," I know the reason. If my words, carefully devoid of classified information, met with such hesitancy, then I'm not surprised that a more conscientious effort is not made by others.

The "need to know more about what the Air Force is thinking, as well as what it is doing," requires a professional yet technical description of the tools available to the Air Force. My thinking is conditioned by a need to fulfill the levied requirements, within the resources and capabilities which exist or are planned and funded, not by dreams of how it could be. The futility of writing an article, similar to Mr. Frisbee's "Air Defense: Weakest Link in the Deterrent Chain," only to have it disapproved for public consumption, is a reality. . . .

I accept the responsibility to personally increase public awareness, knowledge, and understanding in those areas where my awareness, knowledge, and understanding are expert. Nevertheless, no professional would jeopardize national security by reactions imprudent or impatient. Secretary Laird's efforts to improve conditions will produce, hopefully, a military atmosphere in which reluctance to write is no longer necessary.

MAJ. RICHARD R. SCHEHR
Ent AFB, Colo.

• *We are aware of the clearance problems facing military writers. There are legitimate restrictions on what may be discussed publicly by professional airmen. In his sensitive position as Chief of the Weapon System Division, DCS/Evaluation, Fourteenth Air Force, Major Schehr is particularly bound by those restrictions. But there is a wide range of subjects that can be discussed: broad areas of strategy and tactical application, military management, leadership, military history, the airman's view of his place in American life, to mention a few. We believe that members of the other services, who are subject to the same restrictions as Air Force people, are producing more professional literature*

than are the blue suiters. A former official of the Office of the Secretary of Defense remarked to us that of all military people, those in the Air Force have the most exciting and important story to tell, but much of it isn't being told. We agree, and continue to encourage a more complete telling in this magazine and elsewhere, too. —THE EDITORS.

Dismal Dud

Gentlemen: In Mr. Witze's scathing attack on No. 1 Dove Fulbright ["Airpower in the News," January '71], he overlooked the salient fact of the POW raid. Despite the loud bluff of the Administration and the cries of brave heroes and a basketful of medals, the raid was a colossal failure. It also alerted the enemy for future raids, and it was little comfort to the prisoners themselves to discover that the US, in a giant rescue attempt that had been planned for months, couldn't put it all together. Despite Laird's protests to the contrary, the Army intelligence was pitiful.

In this war, with medals being handed out like crackerjack prizes, the significance of the Distinguished Service Medal, Presidential Unit Citation, and the DFC, to mention a few, has been totally lost. But, as the Sergeant said when the undersigned received the DFC during World War II, "That medal, Lieutenant, plus ten cents, will get you a cup of coffee."

Today you'd have to add five cents to the ten.

1ST LT. WHITNEY CUSHING (RET.)
Palm Beach, Fla.

Our Royal Flushed Faces

Gentlemen: Your January '71 issue contains a well-illustrated article, "William Tell '70." However, the article contains the same error that has appeared in your magazine from time to time during the past three years, *i.e.*, in references made to the RCAF. . . .

The Royal Canadian Air Force ceased to exist on February 1, 1968, as also did the Canadian Army and the Royal Canadian Navy. Their places were taken by a single service known as the Canadian Armed Forces. Accordingly, reference to any unit or element of this force should be, for example, "The CAF's 409 All Weather Squadron," or the "Canadian Armed Forces' 409 All Weather Squadron."

This matter is probably rather insignificant in relation to your overall view of things. It is offered merely in the interest of helping you to maintain the very high standard of correctness for which your magazine is renowned.

BRIG. GEN. W. M. GARTON
Canadian Armed Forces
Great Falls, Mont.

Triad—and True

BACK in Iowa, when milk was pulled by hand from a sometimes unwilling cow instead of being poured out of a plasticized carton, there were several ways of approaching the problem. (One element, common to all, was that the milking be done from the cow's right. The reasons for this have never been clear to me, but the tradition is firmly accepted by all cows, if not by all milkers.)

The most daring milkers would shun the use of a stool and simply squat, with no visible means of support. Middle-of-the-roaders would use a one-legged stool shaped like the letter "T". These were cheap, and easy to fabricate, but the balance of terror was a delicate one. Milkers who would rather be safe than sorry, and who preferred not spilling the milk in the first place, rather than agonizing about whether or not to cry over it, invariably used a three-legged stool. It was stable, cost-effective, spillage was kept to a minimum, and attention could be paid unswervingly to the task at hand. I never saw anyone use a two-legged stool.

All analogies run the risk of oversimplification, of course, and the connection between milking a cow and deterring a nuclear attack may seem tenuous. But I have been driven to it by the Pentagon's insistence on referring to the three basic elements of our deterrent forces collectively as a "triad." It is not a good word. If it were, it would not have to be explained. But it has passed into the jargon, irretrievably, I fear. I can understand a reluctance to say "trinity," and I suppose "trio" would be too frivolous. "Troika" would smack too much of a Russian snow job. So we are stuck with triad.

Adm. T. H. Moorer, Chairman of the Joint Chiefs of Staff, has described the triad, and the need for it, as follows:

"In the past, we have been able to obtain a *high confidence* in our deterrent capability by maintaining a sufficient 'second-strike' capability in *our strategic force mix of land-based missiles, sea-based missiles, and bombers*. Now that we are faced with nuclear parity, each of these force categories is of even more critical significance, for each strategic force has its own inherent strengths as well as weaknesses. . . ."

This is an important statement and Admiral Moorer's use of "confidence" is especially

relevant. Deterrence is essentially a state of mind, created and reinforced by physical realities. It means preventing the other guy from hitting you by convincing him that he will be hurt so badly in rebuttal that the original hit wouldn't be worth the risk. He must have confidence in your ability to hit back—or he won't be deterred. And you must have equal confidence in your own strength—or he can bluff you. And he must have confidence in your confidence—or he'll take the chance. So confidence, on both sides, is essential to deterrence—and you can't be very confident on a one-legged stool.

This is why, in this issue of AIR FORCE Magazine, we are expending so much time and space on Minuteman and its critical role as the land-based missile element of the American deterrent triad. There is a school of thought, whose adherents are well-meaning and articulate although unthinking and ill-informed, which would like to turn our triad into a one-legged stool, with all its risks of instability, insecurity, and, above all, lack of confidence.

Bluntly put, the idea is to eventually put all of our deterrent power at sea, in missile-carrying submarines. The first step is to undermine the confidence of the American people and their legislators in Minuteman. Being in fixed positions, so the argument goes, Minutemen are vulnerable. We know where they are. The Soviets know where they are. Submarines, on the other hand, are said to be invulnerable, because they move about in the ocean, and the Soviets do not know where they are. The fact that we often do not know either is conveniently overlooked.

The case for Minuteman is made elsewhere in this issue (*see page 32*). Suffice it to say here that it *is* vulnerable to surprise attack—under certain combinations of circumstances. So are submarines. So are manned bombers. And that is exactly the point Admiral Moorer was making about the need for the *entire* triad and for confidence in it—on our part and on the part of the enemy. Eroding American confidence in one leg of the stool must inevitably erode enemy confidence in it as well. And without confidence there is no deterrence. It is as simple as that. And as terrifying. ■

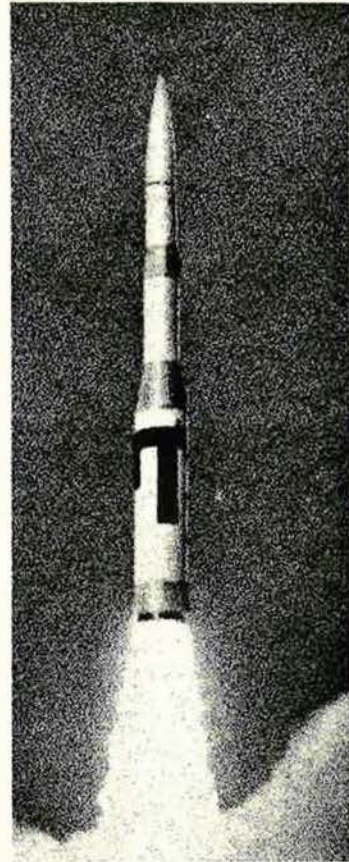


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Autonetics guidance and control systems for Minuteman III surpass requirements in all major categories—accuracy, reliability, weight and survivability.

Hardware delivery continues in complete support of program requirements and within budget.

Not bad when you consider that this bird is the most

advanced unmanned aerospace system ever built.

Autonetics has supplied 99 percent of the electronics—inertial navigators, on-board computers, checkout equipment—through three generations of Minuteman missiles.

Minuteman is the product of a First Team. Under Air Force

management, the associate prime contractors and thousands of subcontractors and suppliers have armed our nation with an imposing deterrent to war.

A message, we believe, that's appropriate on this, the 10th anniversary of Minuteman and the 25th anniversary of Strategic Air Command.



Autonetics
North American Rockwell

Airpower in the News

By Claude Witze

SENIOR EDITOR, AIR FORCE MAGAZINE

Austerity Stays with Us

WASHINGTON, D.C., FEB. 12

The Nixon Administration has sent its proposed budget for Fiscal 1972 to Congress and appears to have shaken the liberals somewhat by accepting an anticipated deficit of \$11.6 billion. You may have forgotten it, but a year ago, the President offered a budget for Fiscal 1971 and predicted a surplus. At that time it was written on this page of this magazine that "there is good reason to believe there will not be one." The reason was so good, in fact, that the surplus turned out to be a deficit of \$18.6 billion. That experience provides the best possible reason for accepting all federal financial forecasts with a highly raised eyebrow.

With that as an introduction to the subject, it is essential that we quote the first two paragraphs of President Nixon's budget message. It says:

"In the 1971 budget, America's priorities were quietly but dramatically reordered: For the first time in twenty years, we spent more to meet human needs than we spent on defense.

"In 1972, we must increase our spending for defense in order to carry out the Nation's strategy for peace. Even with this increase, defense spending will drop from thirty-six percent of total spending in 1971 to thirty-four percent in 1972. Outlays for human resources programs, continuing to rise as a share of the total, will be forty-two percent of total spending in 1972."

Total federal budget outlays for the new year are estimated at \$229.2 billion. Of this, \$76 billion is requested for defense. That figure, however, is a less significant figure than the proposed Total Obligational Authority (TOA) for defense, which is \$79.2 billion, up from

NOA and TOA

Each year, the Defense Department budget is presented with two sets of figures, which are different, but do not vary by more than a small percentage of the total. They are called Total Obligational Authority (TOA) and New Obligational Authority (NOA).

This year, a newspaper reporter, covering his first defense budget, asked for a definition of the difference between TOA and NOA "in laymen's language so we can understand it." Here is the reply:

"Your wife sends you to the store; she gives you a list of groceries and it totals \$10. You also have two cases of Coke bottles to return, and for those you will get twenty-four cents. She gives you the difference in cash between the \$10 and the twenty-four cents, or \$9.76. The cash she gives you is NOA. The NOA plus the Coke bottle money equals TOA."

\$75.3 billion for Fiscal 1971. TOA represents the total program that the Pentagon wants to initiate in the year. Not all of it will be paid for in the fiscal year, and some of it will be financed by appropriations of previous years. TOA remains, in effect, the best index and is the one usually used in budget discussions.

On this basis, here is the Defense budget summary, by program, in billions of dollars:

Program	TOA
Strategic Forces	\$ 7.6
General Purpose Forces	24.3
Intelligence and Communications	5.6
Airlift and Sealift	1.1
Guard and Reserve Forces	3.1
Research and Development	6.1
Central Supply and Maintenance	8.7
Training, Medical, and Personnel Activities	13.7
Administration	1.5
Support of Other Nations	3.7
Military and Civilian Pay Increases	2.6
Volunteer Armed Force	1.2
Total	\$79.2

If the total TOA is summarized by components of the Defense Department, the breakdown is:

Component	TOA
Army	\$21.5
Navy	23.3
Air Force	22.8
Defense Agencies, OSD	1.8
Defense-wide	4.7
Civil Defense	.1
Military and Civilian Pay Increase	2.6
Volunteer Armed Forces	1.2
Military Assistance Program	1.2
Total	\$79.2

The new infusion of money into Navy programs can be attributed in large part to the shipbuilding and ship-conversion program. There are nineteen new vessels and nine conversions proposed, but there is no money for another nuclear carrier. The Navy's total procurement request is \$9.3 billion, nearly a third of it for vessels.

On the Air Force side, planned procurement totals \$6.5 billion; \$2.9 billion of this is for aircraft and \$1.9 billion for missiles. Compared with Fiscal 1971, this is a decrease in the aircraft allocation and an increase in funding for missiles.

Here are the procurement programs for the three services for the three most recent fiscal years, by item:

Aircraft	FY 1970	FY 1971	FY 1972
Army	1,005	802	400
Navy, Marines	339	268	290
Air Force	552	558	188
Number of Aircraft	1,896	1,628	878

Airpower in the News

Missiles	FY 1970	FY 1971	FY 1972
Army	33,079	19,076	16,033
Navy, Marines	3,051	3,141	2,458
Air Force	1,600	542	3,035
Number of Missiles	37,730	22,759	21,526

The higher cost of USAF and Navy equipment is reflected in the allocations to buy these aircraft and missiles. The Army seeks \$124 million for its 400 aircraft. This contrasts with the Navy's \$3.4 billion for 290 airplanes and USAF's \$2.9 billion for 188 aircraft. Of the 188, incidentally, only 164 are for USAF's inventory. The remaining twenty-four are for our allies.

To the aircraft and missile industry, the Fiscal 1972

TOA calls for \$6.4 billion on aircraft contracts, up from \$6.2 billion this year. For missiles, the figure is \$3.8 billion as opposed to \$3.4 billion this year. In the area of electronics, the figure is down, from \$838 million in Fiscal 1971 to \$795 million.

From the procurement viewpoint, this means, in many cases, that the situation has stopped getting worse. Here are key projects, comparing Fiscal 1971 funding with that proposed for Fiscal 1972, in millions of dollars:

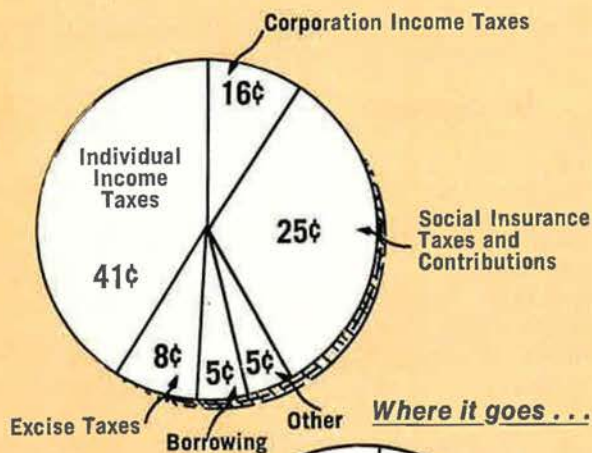
Item	FY 1971	FY 1972
B-1 bomber (USAF)	\$ 75	\$ 370
AWACS (USAF)	87	145
SRAM (USAF)	168	237
A-X (USAF)	28	47
F-15 (USAF)	347	414
F-4 (USAF)	78	142
A-7 (USAF)	243	205
F-111 (USAF)	666	190
Minuteman III (USAF)	720	926
AGM-65A (USAF)	31	87
F-5 (USAF)	9	70

Defense Spending—

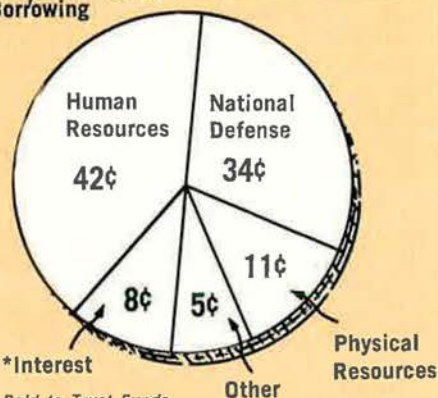
THE BUDGET DOLLAR

Fiscal Year 1972 Estimate

Where it comes from ...



Where it goes ...



* Excludes Interest Paid to Trust Funds

Pie chart shows how budget dollar will be divided in Fiscal 1972. The cut for national defense includes Pentagon money, plus funds for same mission spent by AEC and other agencies.

Now that the Ninety-second Congress is in session and under way, there is only one thing certain about what we will see in the *Congressional Record* over the coming months. It is that there will be a substantial amount of misinformation spouted on the floor of the House and Senate about the true nature of the Defense Department budget. The Pentagon will be accused of starving needy American children, pauperizing their schools, diverting vital funds from all areas of human and civic welfare into the evils of war and weaponry. It is easy to find statements in the newspapers, such as those proclaiming that "three-quarters of our national budget goes to military expenditures" (*New York Times*, Jan. 29, 1971), and that "it [the military] accounts for four-fifths of the federal government's purchases" (*Wall Street Journal*, Jan. 29, 1971). These statements are incorrect, but they persist despite all efforts to publicize more accurate arithmetic.

Defense Department efforts to show how national priorities have shifted in the past few years are not heard loud and clear. Robert C. Moot, the Pentagon Comptroller, has charged that "the budget situation that the critics are describing does not exist today. Trends in government spending have changed over the past two decades, and our critics continue to address past history rather than current facts." Defense spending, he says, does not dominate government spending. As a matter of fact, Defense spending hasn't had half the federal budget since 1958, and that was a milestone passed with no fanfare at all.

The Department's proposed budget for Fiscal 1972, the year starting next July 1, continues to demonstrate Mr. Moot's thesis. Here are some points:

- The FY 1972 budget represents 6.8 percent of the Gross National Product, the lowest percentage since 1951. In 1968, for example, it was 9.5 percent of the GNP.

- In Fiscal 1972, the Pentagon is asking for 32.1 percent of the total federal budget (not the seventy-five percent figure used commonly in the press). Next year's requirement is the lowest portion of the total budget since 1950.

- Defense outlays (total of checks to be signed in the fiscal year) will be about \$76 billion, which is \$1.5 billion more than in Fiscal 1971. But the dollar values are not even. Pay scales are higher; the indexes for services and

LAMPS (Navy)	4	39
P-3C (Navy)	166	318
S-3A (Navy)	288	582
ULMS (Navy)	45	110
Poseidon (Navy)	382	409
AV-8A Harrier (Marines)	64	95
SAM-D (Army)	83	116
Lance (Army)	84	112
Cheyenne (Army)	17	13
Safeguard (Army)	1,331	1,278

Turning to the requests for research and development funding, much of which is included in the above tabulation, the total for the Pentagon goes up from \$7.1 billion in Fiscal 1971 to \$7.9 billion in Fiscal 1972. Out of this, USAF seeks \$3 billion, the Navy \$2.4 billion, and the Army \$1.9 billion. All of these figures include the requirements for test and evaluation.

The Defense Department did not announce any base closings and indicated there are none planned under the proposed budget, although Congress may force a change in this regard. Manpower will continue to decline. The

Air Force will slip from 757,000 in uniform to 753,000. The Army will drop from 1,107,000 to 942,000, the Navy from 623,000 to 604,000, and the Marines from 212,000 to 206,000. The total of men under arms will fall from 2,699,000 to 2,505,000.

On the civilian side, Defense Department overall employees in mufti will be cut from 1,104,000 to 1,082,000.

In defense-related industry, it is anticipated that employment will continue to decline, but not as swiftly as it has in the recent past. The Pentagon says that, in Fiscal 1968, there were 3,470,000 industry workers who owed their jobs to defense contracts. This fell to 2,775,000 in FY 1970, to 2,240,000 in FY 1971, and will slide to 2,160,000 in FY 1972. In practical terms, this means there will be a decline of another 80,000 after a slump of more than 1,200,000 in the three previous fiscal years.

The annual budget struggle will continue now for many months. There are determined liberals in Congress who still insist there is fat in the defense budget. On the other hand, the facts do not support this contention, and many legislators, recognizing the continued threat, will be reluctant to trim the Nixon program. ■

vs. the Myth

goods reflect the impact of inflation. If the outlays of past years are interpreted in terms of 1972 dollars, outlays for Fiscal 1972 will be down by \$3.6 billion—not up. Again taking 1968 as an example, and in terms of constant 1972 dollars, Pentagon outlays in Fiscal 1972 will be \$23.9 billion below the 1968 level.

- Pay and related costs have increased by \$17.6 billion since Fiscal 1964. This is an increase of more than eighty percent. In the same period, Defense manpower has decreased by 3.5 percent. The proportion of the Defense budget devoted to pay and related costs has increased from forty-three percent in Fiscal 1964 to fifty-two percent in Fiscal 1972.

- Operations funding is up \$22.1 billion since Fiscal 1964, but all except \$4.3 billion of this increase represents inflation.

One of the more common accusations thrown at the Pentagon is the blithe assertion that the Defense budget always keeps climbing higher and that this diverts money away from essential domestic and human welfare programs. The facts do not support the assertion.

It is true, historically, that, until today, the military budget in postwar years never got back to the prewar level. A chart of wartime budget trends, compiled from constant dollar values, shows that the military budget went up more than thirty-eight times to hit its World War II peak. After the war, it never got lower than four times the prewar level.

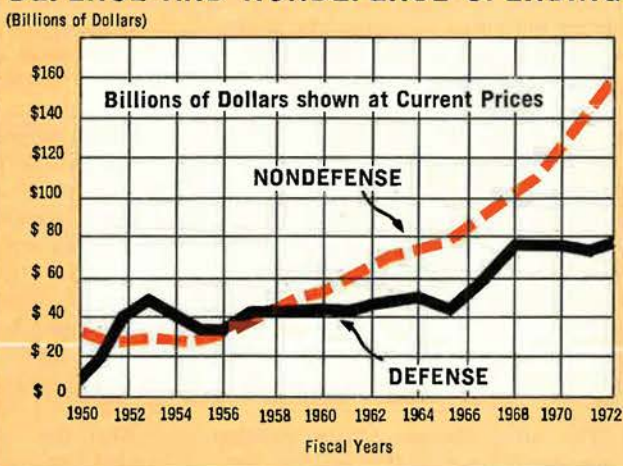
In the Korean War, the budget went up about three times, but never dropped back to lower than twice the prewar level.

In the outlook for Fiscal 1972, the Pentagon anticipates the Defense budget index will fall to its prewar, or Fiscal 1964, level in constant dollars.

A final graph has been made available that shows the federal budget trends for both defense and nondefense expenditures. It shows how the total fiscal year budgets, in 1972 dollars, are divided. At the 1972 level, the total at the extremity of the two curves is about \$229 billion.

From 1964 on, the increase in the nondefense federal budget (broken line) is 230 percent. That is four times greater than the increase in the Defense budget (solid line).

FEDERAL BUDGET TRENDS — DEFENSE AND NONDEFENSE SPENDING



This graph demonstrates trend of expenditures for defense and nondefense purposes from 1950 to 1972. Curves refute the argument that security diverts money from domestic essentials.

INDEX OF CHANGES IN CONSTANT PRICES

Defense Wartime Budget Trends . . .	INDEX		
	PREWAR	PEAK	POSTWAR
World War II (Fiscal Years 1940-45-48)	100	3,839	405
Korean War (Fiscal Years 1950-53-56)	100	290	219
Southeast Asia (Fiscal Years 1964-68-72)	100	132	100

Nixon Administration anticipates that postwar military budget, after Vietnam, will find buying power unchanged from prewar, unlike our experience after World War II and Korean conflict.

By William P. Schlitz

NEWS EDITOR, AIR FORCE MAGAZINE

WASHINGTON, D.C., FEB. 8

The Communist nations were busy in space in 1970, according to the Aerospace Defense Command. They conducted space shots at a rate almost double that of the US. For example, in one sixty-day period, the Soviet Union launched twenty-two spacecraft.

ADC, responsible for keeping tabs on worldwide space activity, said that, from January 1 through December 31, 1970, the Soviets had eighty-eight payload launches, compared to only thirty-five by the US.

In July, the Russians tested a fractional orbital bombardment system; it reached a height of 130 miles, circled the earth (crossing the southern tip of South America) and landed in the Soviet Union north of the Caspian Sea, several hundred miles from its launch site.

Particularly notable in 1970 was the Soviet Union's Luna-16 soft landing on the moon in September.

Early this year, the Soviet Union reported that its costly attempt to place an instrumented package on the planet Venus had resulted in brief transmissions from the surface that confirmed high planetary temperatures.

The latest Soviet Venus mission represented a major, if expensive, suc-

cess and "first" in that the Russians seem to be sure that this time their package landed on the planet and sent back some valuable data. On four previous attempts, Soviet instruments transmitted for a while during descent but then fell silent, presumably before reaching the surface (see February AIR FORCE, page 28).

For its part, the US has a fairly substantial space agenda for 1971. Highlights of NASA's flight program are the two manned Apollo missions to the moon and two unmanned Mariner trips to Mars late this spring. The Mariner missions will mark the first attempts to put spacecraft in orbit around a planet.

In addition, NASA has scheduled a wide range of scientific and applications satellites, aeronautical research, and cooperative space exploration with other countries.

At this writing, Apollo-14 is in the midst of its lunar mission, following launch and moon landing. If all ends well, on July 25 Apollo-15 will make the trip with Astronauts David R. Scott, Alfred M. Worden, and James B. Irwin as crew. This mission will employ an electric-powered roving vehicle for transport on the lunar surface.

Also this year, NASA plans extended testing of the supercritical

wing, a revolutionary new airfoil that in its design allows jet aircraft to cruise at greater subsonic speeds or permits structural weight savings on standard aircraft.



The Air Force has officially designated its new International Fighter Aircraft (IFA) the F-5E.

Previously called the F-5-21, the fighter is an improved version of the F-5 Freedom Fighter built by Northrop Corp. and currently in the service of fifteen countries.

The aircraft is intended to provide US allies, particularly in Southeast Asia, with air superiority in defense of their territories in the 1970s.

In any event, several losers in the competition for the IFA contract have vowed vigorous campaigns to sell their aircraft in markets abroad.

Lockheed, for one, has strong hopes for the substantially updated version of its F-104. Designated the CL-1200, the aircraft will be offered in two versions, the Dash 1 and the Dash 2, which differ mainly in terms of engines.

Lockheed rates as prime candidates for CL-1200 orders: Germany, Holland, and Italy, with Belgium, Denmark, Norway, and Switzerland showing interest.

--Wide World Photos



The climax was spectacular and happy as Apollo-14 splashed down in the Pacific on February 9, following its return from the moon. The crew—Shepard, Mitchell, and Roosa—went into isolation after boarding the carrier USS New Orleans. They'll remain in quarantine for three weeks as a safeguard.



Lt. Gen. A. P. Clark, Air Force Academy Superintendent, second from left, poses with the all-Air Force crew of the Apollo-15 lunar-landing mission. From left, Col. David R. Scott, Lt. Col. James B. Irwin, and Maj. Alfred M. Worden. The trio's flight, barring the unexpected, is scheduled for July.



Col. Edwin E. Aldrin, Jr., of the Apollo-11 crew, and history's second man on the moon, will return to USAF duty in July, commanding the Air Force Systems Command's Aerospace Research Pilot School, Edwards AFB, Calif.

The aircraft can be configured to attain speeds at altitude between Mach 2.2 and Mach 2.4. It is designed to maintain maximum commonality with the F-104, which is being built under license by a European consortium. The existing facilities could be used to produce the CL-1200 at a considerable cost saving, Lockheed believes.

The CL-1200 differs from the F-104 by using a larger wing mounted high on the fuselage, a rebuilt aft-empennage, a low tail design with only a vertical stabilizer, and generally enlarged control surfaces. The result, the company claims, is an aircraft that accelerates as rapidly as the F-104 but provides superior maneuverability, a turning radius several hundred feet shorter, and greatly improved capabilities in terms of intercept and air-superiority missions.



In January, the Air Force's first tactical squadron containing Minuteman III missiles became operational at Minot AFB, N.D. (see also page 22).

On January 8, the 741st Strategic Missile Squadron, commanded by Col. Mario E. Peyrot, received its fifth flight of Minuteman IIIs. The site was then turned over to Strategic Air Command by Col. Franklin A. Hasley, Site Alteration Task Force Commander for the Space and Missile Systems Organization (SAMSO).

The squadron consists of five manned launch control centers and

fifty unmanned silo launchers. The 741st is part of the 91st Strategic Missile Wing commanded by Col. Grover C. Graves, Jr.



Northrop Corp.'s Ventura Div. has been named to provide aerial target service for the NATO Missile Firing Installation in the Mediterranean Sea.

NATO anti-aircraft missile crews from Germany, the Netherlands, Denmark, Norway, Belgium, France, Greece, and the US use the facility in training, the backbone of which consists of firing live Hawk missiles.

At the range, located on the island of Crete, Ventura will utilize its MQM-74A jet-powered drone—called Chukar by NATO forces. It is also produced for the US Navy, which has ordered 1,500 of them. The drones are recoverable and usually can be flown several times. Simulating the flight characteristics of aircraft, the drones can be launched from ship or shore.

Contract for target service was let by the Greek government acting for NATO and is valued at about \$7.9 million.



In late December, the Army announced another success in its development of the Safeguard antimissile system.

A Sprint missile was fired from

the Kwajalein Missile Range in the Pacific and came within "kill range" of an incoming target nose cone launched from California.

Sprint is the fast, short-range missile in the system, nuclear armed, and designed to destroy within a twenty-five-mile radius enemy warheads that get past its long-range partner, Spartan.

A Spartan missile, a system designed for ranges up to 400 miles, successfully intercepted a target above the atmosphere over the Pacific last summer.

The Sprint test moves Safeguard another step toward operational deployment, scheduled initially for 1975.



The Air Force has given a go-ahead for full production of its new AGM-9 short-range attack missile (SRAM).

Boeing Co., Seattle, Wash., last June was awarded a contract to produce long-lead-time items for SRAM. The latest fixed-price-incentive-fee contract for \$148,399,036 brings the total amount thus far obligated to \$183,599,036.

The SRAM test program has moved along smoothly. SRAM has been launched twenty-eight times to date over the White Sands Missile Range in New Mexico—nineteen from the B-52 test aircraft and nine from the FB-111. Two of the latter were at supersonic speeds. All remaining

Pictured here is the Chukar jet-powered target drone that will be employed in training NATO anti-aircraft missile crewmen on the island of Crete in the Mediterranean. Ventura Div. of Northrop Corp. produces the missile and will supply service at the training installation under a three-year contract. See accompanying text for further details.



Aerospace World

SRAM launches will be from the FB-111, with the last expected this coming June.

SRAM is an air-launched missile controlled by an inertial-guidance system and armed with a nuclear warhead. It is propelled by a two-pulse, solid-rocket motor with a programmable, variable-time delay.

SRAM will be used by the FB-111

A short-range attack missile (SRAM) is test-launched from a B-52 over the White Sands Missile Range in New Mexico. The Air Force recently gave the go-ahead for full production of the supersonic stand-off attack missile.

It is to be used on the F-111 and upcoming B-1, the Air Force's new bomber now in development.



and B-52G and H models. It also is intended for USAF's supersonic B-1 bomber, currently being developed. Tactically, SRAM will allow aircraft to attack targets while out of range of ground defense.



In yet another missile matter, the US Army Missile Command has proceeded with the first production buy of its Lance missile.

Lance is a highly mobile weapon that can be air-transported or air-dropped. Twenty feet long, it weighs 3,200 pounds and can be truck-towed on a light launcher or transported aboard a tracked, self-propelled vehicle that can swim water barriers.

Lance, which can be armed with

either a nuclear or conventional warhead, will permit retirement of the Army's Sergeant and Honest John missiles. It is the first Army missile to incorporate an engine with dual thrust chambers, to use prepacked, storable-liquid propellants, and to contain a simplified inertial-guidance system.

The Army awarded LTV Aerospace Corp. a \$14.2 million fixed-price incentive contract for the missile and a small quantity of support equipment.



Historians and World War II buffs please note: The US and British governments have declassified the bulk of

Division, in accordance with routine Archives procedure.



Lockheed Aircraft Corp., reversing a stand taken only a month ago, announced in February that it would not seek legal redress after all in its dispute with the government, but instead would "reluctantly" accept a \$200 million loss in connection with the development and production of the C-5 Galaxy, the world's largest aircraft. At the same time, the California-based aerospace company disclosed that it had settled a dispute with the Department of Defense concerning the costs of shipbuilding it has performed for the US Navy.

Lockheed's Board Chairman Daniel J. Haughton said these settlements resolve Lockheed's four major contractual disputes with the Department of Defense—C-5A Galaxy cargo transport, AH-56A Cheyenne armed helicopter, Navy ship construction, and the motor for the short-range attack missile (SRAM).

Total losses to Lockheed in settling the four programs under the contemplated terms will amount to \$480 million before taxes, he said.

Lockheed's action on the C-5A followed receipt of a letter from Deputy Defense Secretary David Packard that closed the door on DoD funding amounts in dispute on the C-5A program while contractual issues were settled in court. This letter also implied that resolution of Cheyenne disputes would be contingent on Lockheed's acceptance of the C-5A loss.

Lockheed said it is in negotiation with its lending banks to provide a

records of the Combined Chiefs of Staff up to the end of 1945.

The Combined Chiefs dealt with the highest military matters during the war. Only a small portion of the records was found to require continued classification, and release of these documents will be considered in future years.

In London, the minutes and records of the CCS and its subgroups are arranged in numerical sequence. In Washington, the CCS records are arranged by topic.

In Washington, the documents are in the custody of the National Archives, 8th Street and Pennsylvania Ave., N.W. They are available to scholars and other interested persons through the Modern Military Records



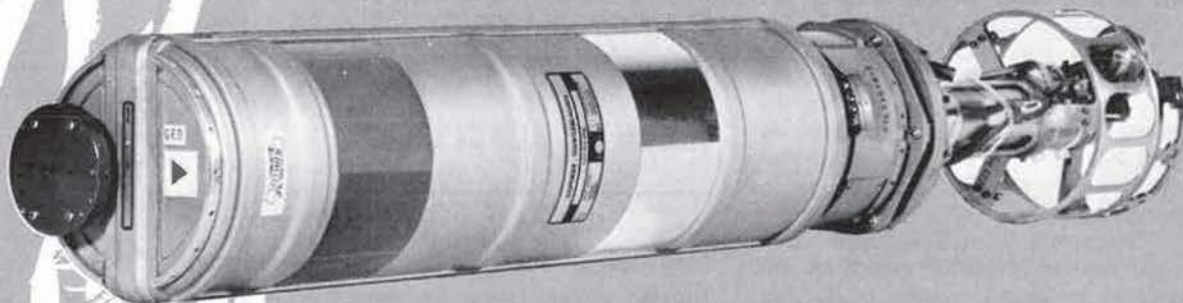
This Fiat G-91 YS has been developed specifically for the Swiss Air Force and equipped with a third set of subwing pylons to accommodate Sidewinder air-to-air missiles for defense.

DEFENDING THE DEFENDER

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BY ACTS OF CONGRESS APPROVED
JUNE 30, 1902 AND APRIL 23, 1904.



John F. Loosbrock, AIR FORCE Magazine's Editor (at left above), recently participated in a seminar—"The Military-Industry Complex"—at the National War College. Other participants, from left, Dr. W. R. Kintner, Director, Foreign Policy Research Institute, U. of Pa.; Dr. H. B. Moulton, National War College faculty (moderator); Gen. D. M. Shoup, former Commandant, USMC; and R. J. Barnett, Center for Policy Research.

restructured financing arrangement. This now is in doubt, however, since the recent financial collapse of Rolls-Royce, which was to supply engines for Lockheed's L-1011 TriStar transport program.



The Air Force has begun consolidation of its correctional institutions within the US and—stressing rehabilitation rather than punishment—will expand the 3320th Retraining Group at Lowry AFB, Colo. (See Nov. '70 AIR FORCE, page 52, for Senior Editor William Leavitt's article on the Group and its mission.)

The 3320th, commanded by Col. Herbert F. Egender, will be enlarged to accommodate 270 airmen, a sizable jump from its present 180. The additional retrainees will come from USAF detention facilities within the US. Retrainees are selected for the group after court-martial convictions and on the basis of a judgment that they show promise of wanting a second chance.

The group, started eighteen years ago, has an excellent record of returning retrainees to duty in the Air Force.

As part of its effort to emphasize rehabilitation instead of punitive approaches, the Air Force is also planning to set up, separately on a pilot basis at Lowry, a new rehabilitative training facility for selected airmen who have not been convicted by court-martial but who have gotten into difficulty and against whom administrative actions have been taken.



Late in January, the US set a world record for long-distance nonstop flight for heavyweight turboprop aircraft

when a Navy P-3C Orion covered the 7,010 statute miles from Japan to the Patuxent River NAS, Md.

The flight was a significant increase over the 4,761-mile mark set by a Soviet IL-18 turboprop aircraft in 1967.

The Orion, built by Lockheed, is a four-engine, low-wing aircraft designed for long-range oceanic surveillance and antisubmarine warfare. The record-breaking plane, piloted by Cmdr. Donald H. Lilienthal, took off from the US Naval Air Station at Atsugi, Japan, on January 21 on a great-circle course over the Aleutian Islands, Alaska, and Canada, and arrived at the Patuxent facility fifteen hours and twenty-one minutes later.

A production model, the P-3C had no engine or fuel system modifications

and is typical of that type aircraft the Navy currently has in inventory. It carried a crew of ten.

The flight was conducted according to rules established by the organization responsible for governing international records, the Fédération Aéronautique Internationale (FAI). Before becoming official, the flight record must be verified by the FAI's US affiliate, the National Aeronautic Association.



The Israelis, by adapting a Stratocruiser to perform aerial-refueling operations, now have the capability to conduct long-range attacks if events dictate such a course.

Once restricted to limited combat range, Israeli Air Force fighters and bombers now can reach the sanctuaries reportedly set up in parts of the Arab world remote from Israel. There is word that the United Arab Republic, for example, has removed its air academy facilities to Libya and large numbers of combat aircraft to the US's former Wheelus Air Base in Libya.

Also, it is said that Iraq has moved combat planes to distant bases and that part of Syria's Air Force now is located in Iraq.

It has been suggested that the Arab nations may be forced into building concrete revetments to protect their aircraft—an expensive and time-consuming proposition—now that the tactical situation has been modified.

Israel also uses the four-engine Stratocruisers, purchased from the US at low cost and refurbished by Israel Aircraft Industries Ltd., as military transport aircraft. ■

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Letter from Europe

By Stefan Geisenheyner

AIR FORCE MAGAZINE EDITOR FOR EUROPE

Franco-German Missiles

A long-neglected armament gap was forcefully brought to the attention of the West when the Egyptians sank the Israeli destroyer *Elath* in October of 1967. The destroyer was practically defenseless against the three Styx missiles fired at it over a range of eighteen miles by Soviet-built PT boats. Ever since then, NATO's naval planners have worried about the vulnerability of their surface fleets to such a threat.

More than 150 PT boats of the *Komar* and *Osa* class, equipped with Styx missiles, are available to the Warsaw Pact fleets, which theoretically could use them to wipe out the NATO navies without coming into gunshot range. To counter this threat, the defense ministries of Germany and France in 1967 started a crash program to develop a medium-range ship- and air-launched antiship missile.

The first results of this program were unveiled during the Paris Air Show in 1969. SNIA Aerospatiale of France and Messerschmitt-Bölkow-Blohm (MBB) of Germany are design leaders of the effort. The French company is developing the Exocet ("Flying Fish") missile, while MBB has concentrated on the air-launched version of the same weapon, named *Cormoran*. Since 1969 considerable progress has been achieved with both versions. Exocet has been successfully test-fired and is ready for mass production. The *Cormoran* is under a tight security wrap, and no new data have been made public since the Paris Show.

Exocet and *Cormoran* are approximately the same size. The ship-fired missile is seventeen feet long—about three feet longer than *Cormoran*. The extra length is needed for Exocet's booster rocket, not required in the air-launched version. Both missiles are propelled in cruise by a long-burning rocket sustainer engine. Exocet weighs 1,550 pounds; *Cormoran*, 1,320 pounds. Each has a diameter of thirteen inches, and a cruciform wing with a three-foot span, plus four short stabilizing tailfins. Each is supersonic, with a range of up to forty miles.

The guidance method for both versions is jam proof. In fact, the target ship may not even know it is under attack before the hit occurs.

The guidance method assumes that the exact location of the target will be known and entered on a grid map display in the combat center of the launch vessel. The target coordinates are fed to the inertial-guidance system of the Exocet prior to launch. On being fired, the missile rises steeply to an altitude of several hundred feet, orients itself toward the target, then dives. On a long-range shot, the missile levels off at from six to nine feet above the water, about halfway to the target. During the dive the weapon reaches supersonic speed and maintains it to target.

Germany's MBB has been engaged in a crash program to develop a medium-range, air-launched antiship missile. Called Cormoran, here is one mounted on a Luftwaffe F-104G. Note camera installed above the pylon to record launch procedure during tests.



The inertial guidance, of course, can supply only a general heading. In the last phase of the flight, a radar homing head takes over, presumably at a distance of one to two miles from the enemy ship. In the short time left before impact, radar countermeasures are not possible, nor can a radar pickup of the missile be achieved during its low-level flight phase.

The German Bodensee Werk GmbH is responsible for the inertial-guidance platforms. Electronique Marcel Dassault builds the ADAC radar homing head for Exocet, and Thompson-CSF, also a French firm, is developing the terminal-guidance head for *Cormoran*.

The same launch and guidance sequence applies for *Cormoran* as for Exocet. The inertial-navigation system of the F-104G launch aircraft is used

to get a fix on the launch position. The target's coordinates are fed into the aircraft's nav-attack system, which would normally steer the fighter to the target. These steering and heading commands are put instead into the *Cormoran* guidance system. Upon firing, the missile heads toward the target while the aircraft returns to base.

The major advantage of this guidance system is that no manual post-launch steering correction is necessary. This reduces the chances of the enemy's utilizing countermeasures designed to disturb radio links. Only in

the terminal-guidance mode, which lasts only a few seconds, may the missile be thrown off course by electronic means.

Little is known about the warheads. Presumably the latest armor-piercing ammunition is used. It would be illogical, though, to aim for the target ship's superstructure. It seems a safe guess, therefore, that *Cormoran* and Exocet dive underwater shortly before reaching the target and thus inflict maximum damage by impacting below the waterline.

The French, German, and Greek naval forces have firmly ordered Exocet in quantity, and several other Western navies are now negotiating with SNIA. Britain plans to equip all its ships with this weapon, and a coproduction agreement with France is be-

ing sought. The Cormoran sales prospects are hidden by security.

There are plans to adapt Exocet for launch from submarines. This would give subs an unprecedented self-defense capability, as well as a longer-range

tion to the use of fiber-glass-reinforced plastics to develop a rigid, hingeless rotor. Extensive tests in static and wind-tunnel environments culminated in the test-flying of the novel rotor with an Alouette II helicopter. Sud

Aviation, the builder of the Alouette, was interested in the new rotor technology, which eventually found its way, slightly modified, into the SA 341 LOH program.

Tests with the rigid fiber-glass rotor were basically successful, and in 1962 MBB embarked on a five- to six-seater, twin-engine helicopter program. The Bo105 is forty percent financed by the company, with the rest covered by a government loan. Total development costs, including a share in the engine development, which was assigned to Motoren-Turbinen Union (MTU) of Munich, amounted by the end of 1970 to DM70 million (\$19.4 million).

By early 1967 two Bo105s were flying. One was powered by the proved Allison 250 gas turbine, the other by the newly developed MTU 6022-A2 turbine. These two prototypes were followed by three preproduction models in 1968 and '69. The first prototype crashed early in the development phase. It had not been equipped with the Bölkow rigid rotor but was flown for test purposes with a conventional rotor.



Germany's first successful postwar helicopter, the Bo105, has reached the mass-production stage. A twin-engine aircraft, the Bo105 has as its power source a unique rigid and hingeless rotor that utilizes fiber-glass technology.

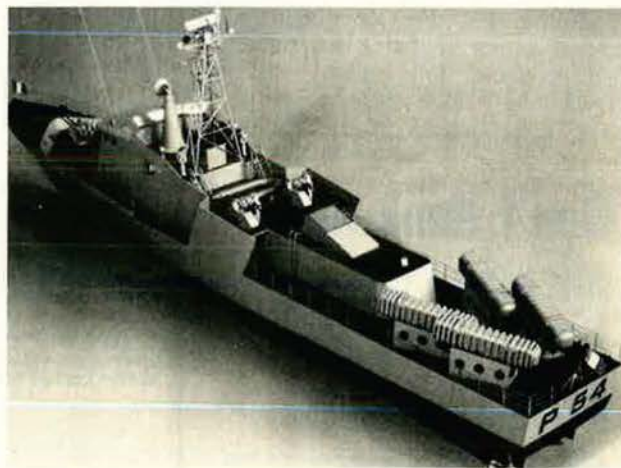
striking power than can be achieved with the conventional torpedo.

Exocet, and probably Cormoran as well, is scheduled to become operational this year. The two promise to shift the military balance toward the European NATO nations in coastal waters and inland seas, where the Western navies have for years been outnumbered and outgunned.

New German Helicopter

The first successful postwar German helicopter is now in mass production. It is the MBB Bo105 light, twin-engine, utility rotorcraft. As early as 1961 the company turned its atten-

France's SNIA Aerospatiale is developing a ship-killing missile, called the Exocet ("Flying Fish"). This engineering ship model shows typical installation of the ship-launched weapon on the stern of a fast patrol vessel.



A Luftwaffe F-104G carrying a Cormoran streaks toward a target in a practice attack. While most details of the new missile remain under security, it is known that the weapon is supersonic, with a range of forty miles and jam-proof guidance.

The novel design of the rotor head, which is made of forged titanium, and the hingeless blades led to some problems and solutions. For instance, the directional stability of the helicopter in cruise was improved by adding stabilizing surfaces on the tailplanes. Vibrations during the transitional phase from hover to forward flight are high, and an extensive program to solve the problem is under way.

There are several ways to reduce the vibrations, and it is largely a matter of determining which is the most cost-effective. The helicopters are now undergoing accelerated service tests involving more than 1,000 hours of flying prior to certification. The tests should be concluded shortly.

The Bo105 is a modern helicopter in the two-ton class, with a standard

Letter from Europe

empty weight of 2,350 pounds. It can carry a useful load of 2,280 pounds. The helicopter is the only design in its class with two engines, providing excellent flight safety and excess power if needed in high altitude and hot climatic conditions. With the MTU turbines delivering 370 horsepower each, the performance of the Bo105 is slightly better than with the two Allison engines offering 317 shaft horsepower each. However, both engines have specific advantages, and the customer can specify which he wants.

The MTU 6022 is simpler and easier to maintain than the Allison, but weighs more and needs a centrifugal clutch to drive the rotor gears. This penalty is acceptable for operations demanding a high horsepower output under adverse climatic and altitude conditions and where continuous operation on one engine is desirable for fuel economy. For military use in NATO, the Allison engine seems pre-

ferable because it provides a high degree of commonality with existing forces as well as a tight service net.

The Bo105 can seat up to six persons comfortably. Alternatively, two stretcher cases plus one attendant and pilot can be carried. It can be equipped with missiles, automatic weapons, and rockets. It features a rescue winch and an external cargo hook. For naval use, emergency pontoon floats can be fitted,

Rolls-Royce RB.108 jet engine, delivering close to 2,000 pounds of thrust. The jet is installed in the cargo compartment with the thrust axis intersecting the center of gravity. With stub wings that will offload the rotor in high-velocity flight, speeds of up to 200 knots should be attainable. This compound design could eventually lead to a fast combat variant of the Bo105.

MBB's market analysts are confident



Bo105s shown flying in formation. MBB sales analysts feel that the helicopter's characteristics will make it attractive to a broad market. Production has initially been set at the rate of ten per month, with 100 Bo105s now on order.

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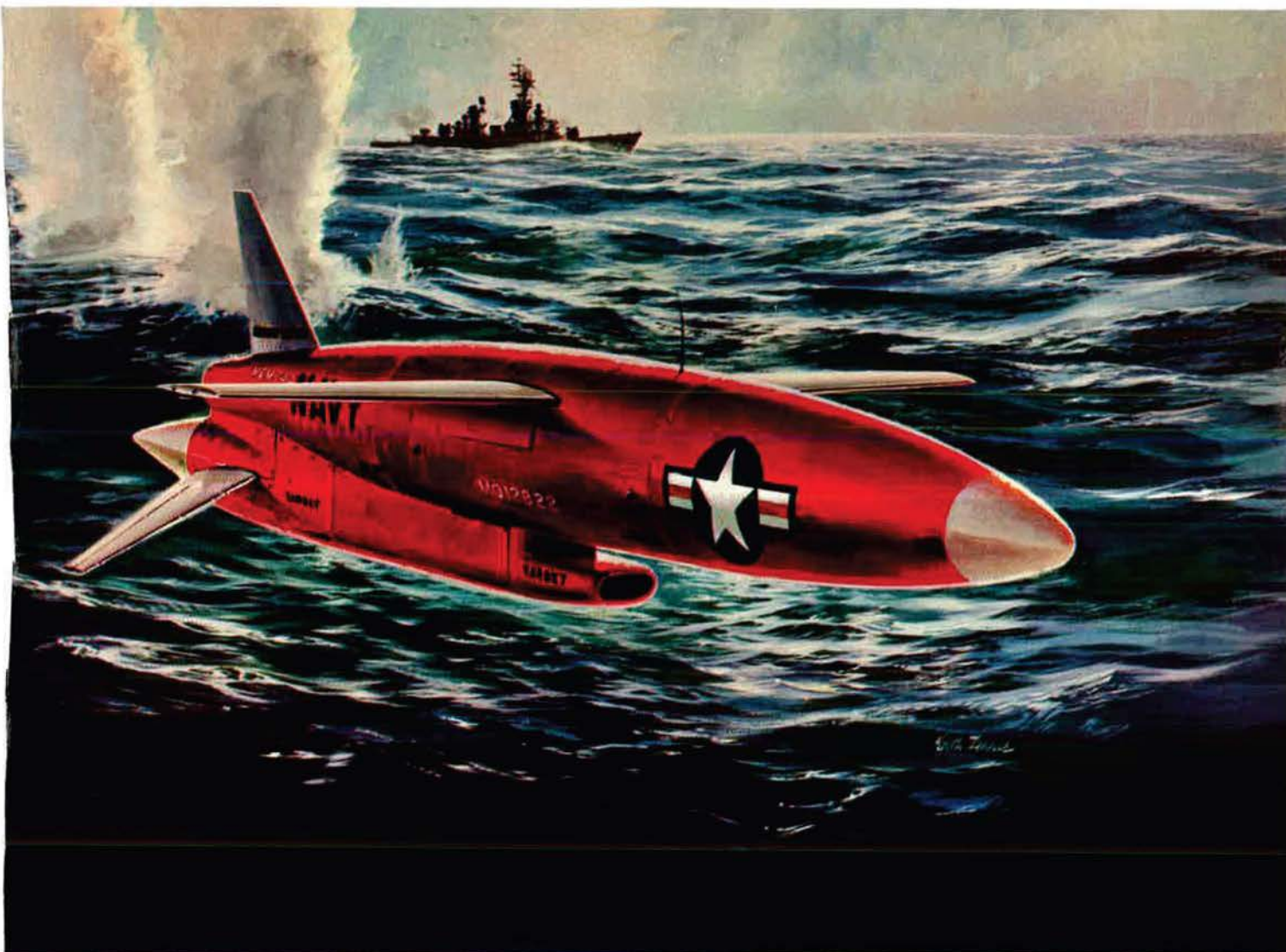
and the rotorblades fold for easy stowage aboard ships.

The speed and altitude performance of the Bo105 are good but not spectacular. Maximum speed is given as 135 knots while the most economic cruising speed is set at 121 knots. Rate of climb with the MTU turbine is 2,065 ft/min, or 1,480 ft/min with the Allison engine. The range of 325 nautical miles with internal fuel only is very good. The Bo105, according to the pilots who fly it, is easy to handle and performs much like a light conventional aircraft since the rigid-rotor system offers excellent flight stability. Landings and takeoffs with a fifteen-degree incline are feasible.

A further development of the Bo105 is due to fly before the end of this year. It is a compound helicopter for high-speed experimental flying. In addition to the Allison engines, the new design is fitted with one lightweight

that the helicopter will meet the requirements of a wide range of customers. The relatively low price tag of \$175,000 for a modern, IFR-capable helicopter is attractive. Production has been started at the rate of ten helicopters per month. About 100 Bo105s are on order or option.

In 1968, the Vertol Division of Boeing acquired the option to produce the Bo105 in the US under license. Vertol plans to enter the design in a militarized and modified form in the US Navy competition for a "Light Airborne Multi-Purpose Helicopter System" (LAMPS). The first Bo105 was shipped to the US late in 1969 and made its first flight early in 1970. It has been widely demonstrated and is presently being reequipped to fit LAMPS requirements. Adoption of the Bo105 by the US Navy would represent a major breakthrough for the German helicopter industry. ■



FROM AN ORIGINAL PAINTING FOR CHANDLER EVANS BY KEITH FERRIS

MAIN FUEL CONTROL by Chandler Evans



71002 Main Fuel Control

The MQM-74A, a new advanced target drone, is currently being produced in quantity for the U.S. Navy by the Ventura Division of Northrop Corporation. Capable of speeds to 460 m.p.h. and altitudes up to 38,000 feet, the MQM-74A is powered by a Williams Research Corporation WR24-6 turbojet equipped with a fuel control engineered and precision-produced by Chandler Evans.

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GAS TURBINE CONTROLS/PUMPS • AIRCRAFT/MISSILE CONTROLS, VALVES AND ACTUATORS



Back in the mid-1950s, odds against the Air Force's developing a relatively simple, solid-fueled ICBM looked long, indeed. But solid-fuel supporters stuck with the idea. Here's how teams of scientists, engineers, and managers in the Air Force and industry brought to operational status a concept that revolutionized deterrence and gave the nation . . .

Minuteman- Ten Years of Solid Performance

By William Leavitt

SENIOR EDITOR/SCIENCE AND EDUCATION

THE NATION and the Air Force marked an important anniversary on February 1, 1971. It was ten years since the first successful firing, from a surface pad at Cape Canaveral (now Cape Kennedy), Fla., of a complete full-range Minuteman ICBM. It wasn't the kind of anniversary that brings forth parades or evokes speeches. But it represented a significant milestone in this country's strategic history.

Minuteman started as what some people in the weapon business thought was at worst a crazy idea and at best something that might better be kept on the back burner. But it was an idea that others believed, passionately, could be made to work. What they had in mind was a rapid-reaction, land-based, solid-fueled, intercontinental ballistic missile. They believed that such a weapon could eventually supplant the unwieldy liquid-fueled missiles, with all their massive plumbing and need for tender loving care. In the late 1950s, the liquid-fueled giants—Atlas and Titan—were already in development and then represented the dominant technological path to American missile deterrence for the oncoming 1960s.

Those who believed in what became Minuteman fought doggedly for the opportunity to prove their case for the land-based, solid-fueled missile. Their struggle during the mid-1950s culminated in political success in early 1958, when the Department of Defense gave the go-ahead for Minuteman's development. It was a scant three years later, in 1961, that Minuteman first flew for real from Cape Canaveral. The years 1958 to 1961 were years marked by toil and test, progress and failure, and finally success of the sort that dramatically changed

the face of American deterrence and led to three generations of land-based, silo-sheathed, solid-fueled ICBMs—Minuteman I, II, and III—and perhaps more (*see also page 32*).

That day at the Cape in 1961 was the affirmation of the dream of missileers, who, through the decade of the 1960s, proceeded to develop and redevelop their Minuteman to its present-day posture of 1,000 "instant ICBMs" on station in silos across the US western plains. Minutemen are so important now as a prime element in the deterrent "triad" of manned bombers, missile-launching submarines, and land-based ICBMs that *today's* strategic arguments are over how best to protect them. Indeed, they are so vital to the US deterrent mix and retaliatory power that a prime purpose of developing US antimissile defenses is to shield Minuteman against attack. That task will require the most careful and precise command and control (*see page 36*).

The prehistory of the Minuteman goes back to the mid-1950s and the early days of the Air Force ballistic missile program. The national decision had already been taken to develop intermediate-range and intercontinental ballistic missiles. The rocket technology of choice was liquid fuels, with all their plumbing and large-crew requirements. The potential of the far-simpler solid-fuel technology was known at the time. But there was a collection of technical problems that ranged from insufficient thrust to difficulty in precisely controlling the burning rate of the chemical "cakes" that make up solid fuel. In the early 1950s, when time was short in the race with the Soviet Union for long-range missile capability, solid-fuel advocates

At left, a Minuteman II soars skyward from an underground silo at Vandenberg AFB, Calif., showing its deterrent stuff for all the world to see.



As automated as the Minuteman may be, it is still people who make sure it's at the ready. Above, SAC personnel manning a Minuteman control panel. Upper right, specialists run tests on a missile to check its operational capability.



had most of the decisional cards stacked against them. Priority had been given to the opposite, liquid-fuel, technology, and the race was already on to get the Atlases, Titans, and intermediate-range Thors and Jupiters off the drawing boards and onto the launching pads. To policy-makers, large-scale, solid-fuel developmental efforts seemed like an additional and perhaps unbearable layer on an already complex developmental program.

Yet, against tough odds, the belief in solids persisted, sustained by many propulsion experts, and particularly by a very determined lieutenant colonel on the staff of then-Brig. Gen. B. A. Schriever, who was running the Air Force missile-development program from his headquarters in California. The young officer was Edward N. Hall, who later went on to a major technical post with United Aircraft in Connecticut. Ed Hall's role in the conceptual development of what became Minuteman I was traced in detail in an article on these pages in 1968 ("Minuteman—An Idea Whose Time Came—in Time," June '68 issue). As a technical officer working in General Schriever's Western Development Division of the old Air Research and Development Command, he campaigned for the investment of time and money in research on solid-fuel technical problems. He and others were able to spark some modest, low-priority, industrial studies, monitored out of Wright-Patterson AFB, Ohio. But it wasn't until 1957, the year of the Soviet Sputnik, that the solid-fuel advocates began to get anywhere with their ideas. Events were converging in their favor.

By then the Air Force could begin to take time to think about a second-generation ICBM. The liquid-fueled missiles were on their way to development. Public interest in rocket technology after Sputnik had increased sharply. And the Navy was shopping around for some sort of long-range missile system it could deploy at sea aboard submarines. The Navy, for a time, considered mounting a seaborne version of the Army's Jupiter liquid-fueled, intermediate-range ballistic missile on submarines (Jupiter was the Army counterpart of the Air Force's Thor IRBM), but the idea proved impractical, thus giving impetus to Navy interest in solid-fueled missiles and providing the genesis of what became Polaris. Navy people interested in solids were able to add to their own studies a good deal of the data that Ed Hall and some of his allies in industry—including Adolph Thiel and Barnett Adelman of the Ramo-Wooldridge organization, then working with the Air Force missile program—had been able to develop in small-scale research efforts.

The same year, 1957, Ed Hall was back in California from a tour of duty in England and armed with an assignment from General



MINUTEMAN AT A GLANCE

Characteristics and Mission: Three-stage, solid-fueled, nuclear-armed (one-megaton) ICBM, capable of speeds exceeding 15,000 mph; fired from protected, underground silos by remote control.

Deployed at: Six SAC bases (Ellsworth AFB, S.D.; Grand Forks AFB, N.D.; Malmstrom AFB, Mont.; Minot AFB, N.D.; Warren AFB, Wyo.; and Whiteman AFB, Mo.)

Number: A total of 1,000 Minuteman missiles are on station, with the newest model—Minuteman III—replacing the earlier Minuteman I and some II models.

Models:

Minuteman I (55.9 ft. long; first-stage diameter, approx. 74 in.; weight, 65,000 lb.) is the earliest, basic, model; range, approx. 6,000 mi.

Minuteman II (59.8 ft. long; same first-stage diameter as Minuteman I; weight, 70,000 lb.) has larger second-stage motor, extended range over the I model, improved guidance, more flexible targeting, payload, and survival capabilities.

Minuteman III (59.8 ft. long; same first-stage diameter as Minuteman I; weight, 76,000 lb.) has improved third-stage motor and multiple-warhead capability; range more than 7,000 mi.

Using Command: Under operational control of the Strategic Air Command (SAC); operational units consist of flights of ten launch sites and one launch-control center. A squadron equals five flights, and a wing includes three or more squadrons.

Development Command: Air Force Systems Command (AFSC), Space and Missile Systems Organization (SAMSO).

Principal Contractors:

Boeing: systems integration, installation, check-out.

TRW Systems: systems engineering and technical direction.

Thiokol, Aerojet-General, Hercules: propulsion. **Autonetics Div. of North American Rockwell:** guidance.

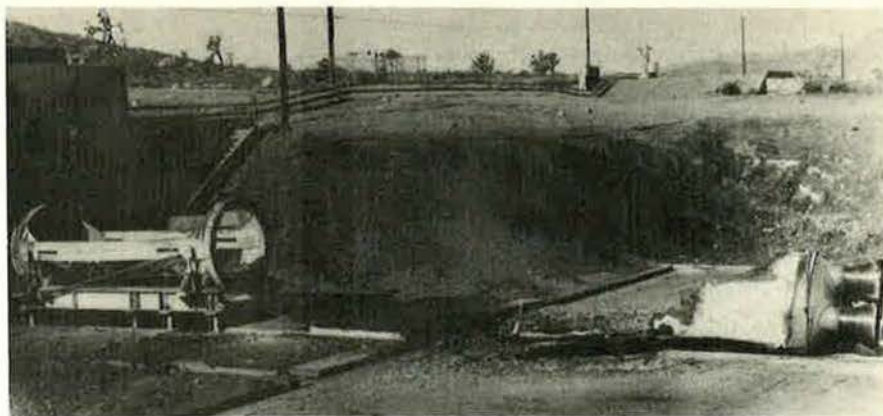
Avco, General Electric: reentry vehicle.

Bell Aerosystems: post-boost control system for reentry vehicle.

Sylvania: ground electronics system.

Far left, care and feeding of Minuteman in the silo. Near left, some history: The first Minuteman to be launched from a silo, lifts off, tethered, from Edwards AFB, Calif., test site on September 15, 1959.

Remains of a Minuteman rocket motor, destroyed deliberately at Edwards AFB, lie there in 1959 after a test to check blast hazards.



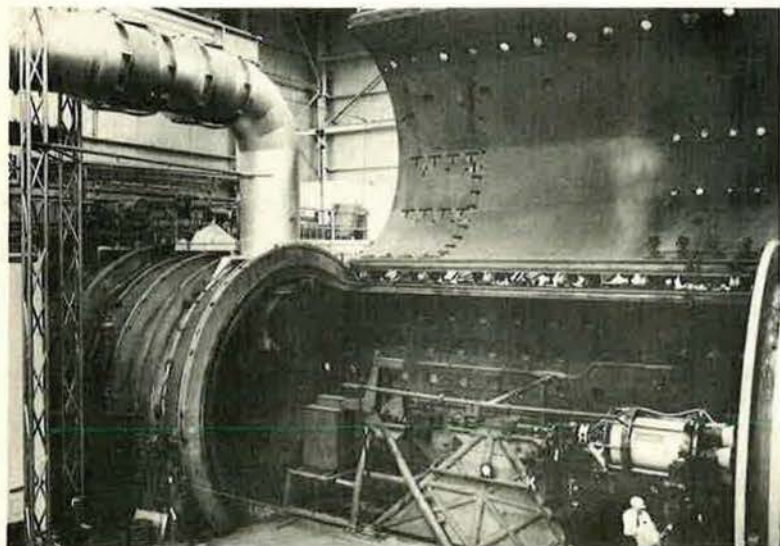
Schriever to examine approaches to second-generation missile systems. The study got tagged "Project Q" and blossomed into an effort that included the design of a new kind of missile weapon system, one that could stand unattended for long periods, could be operated by small crews, could be kept in protected holes in the ground out of which it could be fired directly, could be automatically checked out as to condition and readiness, and could be launched in numbers under the control of a single command center. That was a pretty demanding set of requirements in an era where even the better-understood liquid-fueled missiles with their large retinues of attendants and technicians were so often plagued by failures.

As Project Q proceeded, a collection of choices began to develop at higher, which is to say Pentagon, levels. Some planners argued for Air Force adaptation of the solid-fueled Polaris-

to-be that the Navy by then was working on. Meanwhile, Project Q people had come up with ideas for solid-fueled missile systems of tactical, intermediate, *and* intercontinental range. The Air Force chose the solid-fueled intercontinental option. But the proposed name for the *intermediate-range* projected system, *Minuteman*, was taken over for the continental-based solid-fueled ICBM system that would get the go-ahead for research and development. The struggle, however, was scarcely over. It was not until September 4, 1959, that the highest national priority was given to Minuteman development.

In the fall of the same year, a Minuteman test vehicle was fired in a tethered test at Edwards AFB, Calif. Much work had already been done toward attaining that milestone, including the designation of Boeing as assembly and test contractor for Minuteman, a role that was later expanded to that of integrating contractor for installation and checkout at operational facilities. And the Minuteman project had its first director, Col. Otto Glasser, now Air Force Deputy Chief of Staff for Research and Development and a lieutenant general.

Although the expression is not popular, *Minuteman* was, once it was approved, a crash development program. As early as 1959, the schedule was speeded up so that some operational Minutemen could be on station in 1962, rather than the originally planned 1963. What happened was that the R&D model became the operational model in order to meet the first operational target date. The R&D models were eventually replaced. The target was met:



Arnold Engineering Development Center, Tenn., played an important role in Minuteman R&D.

Malmstrom AFB, Mont., was declared an operational Minuteman base on December 11, 1962, with turnover of the first two Minuteman flights to the Strategic Air Command.

Glasser was succeeded as Minuteman manager by then-Col. Samuel C. Phillips, a soft-spoken management fireball who, a few years later, was destined to direct the Apollo moon-landing program for NASA. Now also a lieutenant general, Phillips heads the Air Force Systems Command's Space and Missile Systems Organization (SAMSO) in California.

It was during Phillips' tenure as Minuteman program director that thousands of intricate details vital to operational arrangements for the weapon system were worked out, ranging from negotiations with the Atomic Energy Commission for providing and handling warheads to organizing the industrial team that had to put together all the parts of the Minuteman system. On top of that, Phillips had to superimpose on the regular Minuteman developmental program another research and development effort for a mobile system—it turned out to be a rail-mounted Minuteman. After getting to the point of operational feasibility, the rail-mounted concept was scrapped.

But against a background of incredible developmental complexity, Minuteman milestones piled up. The idea had become a weapon system that in less than a decade was to evolve through two more generations.

The list of credits for the Minuteman achievement—for Minuteman I, for Minuteman II with its sharply enhanced guidance, and for

Col. Sam Phillips, Minuteman program director; Maj. Gen. O. J. Ritland, Ballistic Missile Division chief; Lt. Gen. B. A. Schriever, ARDC Commander, check progress in the early days of Minuteman program.

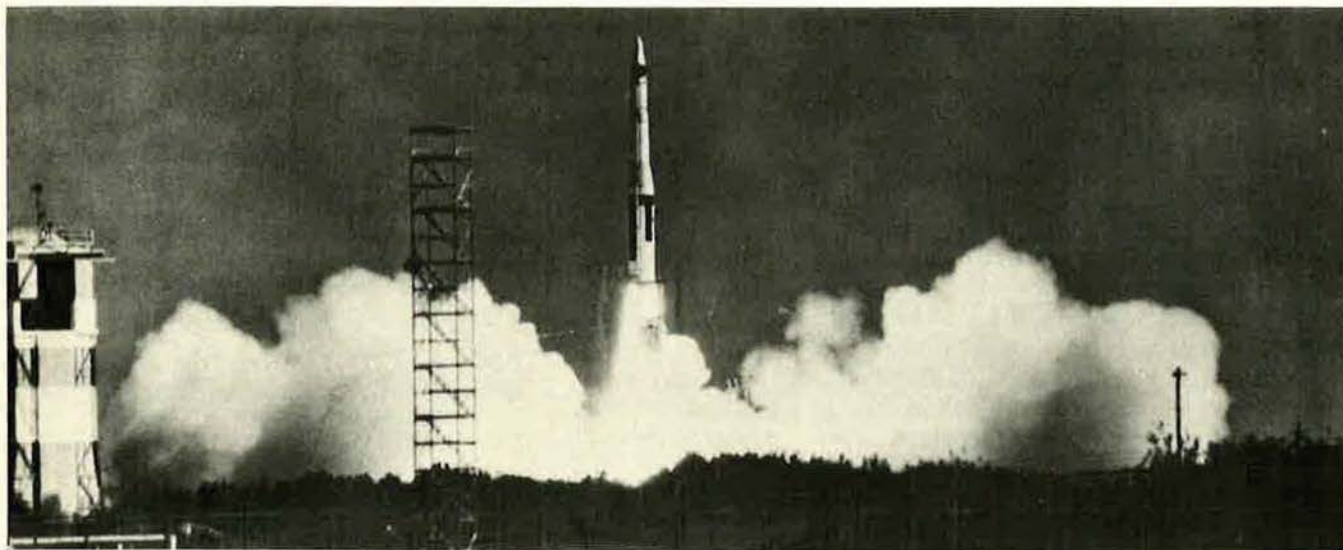


MINUTEMAN MILESTONES

- 1961 February 1**—Successful first firing of complete, full-range Minuteman I from surface pad at Cape Canaveral, Fla.
November 17—First fully successful launch and flight of Minuteman I from underground silo at Cape Canaveral.
- 1962 June 29**—First launch from Cape Canaveral of Minuteman I by an Air Force crew.
July—Start of Minuteman II development.
September 28—First Minuteman I launch from Vandenberg AFB, Calif.
December 11—Malmstrom AFB, Mont., declared first Minuteman operational base, with turnover to SAC of first two flights.
- 1963 February 28**—First operational Minuteman I squadron transferred to SAC at Malmstrom AFB.
- 1964 February 24**—First "ripple" launch (two Minuteman I missiles successively) from Vandenberg AFB.
September 24—First launch of prototype Minuteman II.
December 31—By this date, 700 Minuteman missiles and silos had been turned over to SAC.
- 1965 August 18**—Successful first launch, from Vandenberg AFB, of operationally configured Minuteman II.
June 15—Turnover of last Minuteman I flight to SAC. By this date, 800 Minuteman I missiles had been turned over to SAC.
- 1966 February 24**—First salvo launch of ICBMs (Minuteman I missiles) from Vandenberg AFB.
March—First firing of Minuteman III third-stage motor, at Arnold Engineering Development Center, Tenn.
- 1967 December**—200th Minuteman I launched from Vandenberg AFB.
- 1968 January 5**—By this date, 1,000 operational Minuteman missiles were under SAC control, including 350 Minuteman II missiles.
August 16—First launch of Minuteman III research and development model, from Cape Kennedy, Fla.
- 1969 April 11**—First launch of Minuteman III, from Vandenberg AFB.
- 1970 June 19**—First flight of Minuteman III missiles turned over to SAC at Minot AFB, N.D.
- 1971 January 8**—First squadron of fifty Minuteman IIIs declared operational at Minot AFB.

Minuteman III with its penetration aids, even further enhanced accuracy and multiple warheads capability—is enormously long. It stretches through the crusading years, the developmental years, and the operational years. A vast number of people and facilities, military and industrial, make up the Minuteman complex. Many of the people have been involved from the start. Some by now have gone on to other endeavors. But they can all lay claim to a share in the justification for a recent state-

ment by Maj. Gen. Kenneth W. Schultz, SAMSO Deputy Commander for Minuteman. He expects Minuteman to remain “a viable weapon system through the eighties.” The Minuteman of tomorrow may look very much the same as the bird of the early 1960s, but it probably will be as improved, in terms of accuracy, penetration capability, and survivability, as the Minuteman III is different from and more effective than its distinguished ancestor, Minuteman I. ■



*Ten years ago—
February 1, 1961.
The first Minuteman
I complete vehicle
lifts off the pad at
Cape Canaveral, Fla.*

Minuteman: Some “Blue-Suit” Credits

The “care and feeding” of the Minuteman weapon system is a large job for a lot of Air Force people working with supporting contractors. The principal “blue-suit” organizations involved include: Systems Command’s Space and Missile Systems Organization (SAMSO), whose Deputy for Minuteman at Norton AFB, Calif., Maj. Gen. Kenneth W. Schultz, keeps track of new technology relevant to Minuteman; the Space and Missiles Test Center (SAMTEC), at Vandenberg AFB, Calif., whose 6595th Aerospace Test Wing controls test launches; and the Strategic Air Command’s 394th Strategic Missile Squadron, which performs operational launches out of Vandenberg.

Also, there are six Site Alteration Task Forces (SATAFs) serving the six Minuteman bases. The SATAFs direct on-site changes including launch and support facilities and missile replacements. They work with SAMSO, Air Force Logistics Command, and contractors. The Air Force Contract Management Division of AFSC, at Los Angeles Air Force Station, is responsible for assured delivery of quality Minuteman products from industry. Liaison between industry and the Air Force is handled by Air Force Plant Representative Offices located at industrial sites. Major operational responsibilities are held by the SAC Launch Control Facilities (LCFs). The LCFs are the command centers for the clusters of ten Minuteman silos. Air Training Command has taken part in Minuteman training.

In addition, AFSC’s Arnold Engineering Center, Tullahoma, Tenn., and the Air Force Rocket Propulsion Laboratory at Edwards AFB, Calif.—among other test labs—have made major contributions to Minuteman technical development.

During the research and development phases, the 6555th Aerospace Test Group at the Eastern Test Range, based at Patrick AFB, Fla., proved out the viability of the system. The Minuteman Project Office at Wright-Patterson AFB, Ohio, worked on resolving weapon-system anomalies, and provided weapon familiarization and tech training to SAC people.

Even with all these blue-suit credits, this list can never be complete. It could never encompass the thousands of people, in and out of uniform, who have helped revolutionize deterrence through the development and deployment of Minuteman I, II, and III.



The Minuteman Decade

In the decade since its first flight, Minuteman has evolved through three generations to vastly enhance the operational flexibility of our strategic missile force.

Today's Minuteman III is a viable base for still further refinements in survivability and operational versatility.

The end of the line is nowhere in sight. Experts agree that for . . .

JUST OVER ten years ago — on February 1, 1961 — the first Minuteman ICBM was launched from Cape Kennedy, Fla. (then Cape Canaveral). It set the stage for a massive deployment of a land-based deterrent missile force now encompassing successive versions of the weapon, the latest of which is the highly sophisticated Minuteman III.

The first tactical squadron of Minuteman III now is on ready status at Minot AFB, N.D., with the Strategic Air Command's 741st Strategic Missile Squadron. This deployment of fifty missiles, a part of the 91st Strategic Missile Wing, consists of five manned launch-control centers and fifty unmanned silo missile launchers.

Succeeding deployments of Minuteman III ICBMs are being pushed, and the second tactical squadron is expected to be completed soon. Under current projections, there may be as many as 600 Minuteman IIIs deployed, bolstered by the additional muscle of Minuteman II missiles to fill the 1,000 existing silos of the weapon system.

While SAC is the Minuteman operational command, the weapon system's continuing modifications and improvements are the responsibility of the Air Force Systems

Command and its Space and Missile Systems Organization (SAMSO), headed by Lt. Gen. Samuel C. Phillips, who, as a colonel, spearheaded the Minuteman weapon system development as early as 1959. Today, the Minuteman program is supervised by SAMSO's Minuteman Program Director Maj. Gen. Kenneth W. Schultz, backed by systems engineering and technical direction provided by TRW Systems, plus a strong engineering and production team of associate contractors and subcontractors (*see list, page 25*).

Sophisticated Evolution

The highly sophisticated Minuteman III—perhaps the most complicated weapon system ever developed—is not seen as the end product in Minuteman capability potential. Planners believe it is a viable base for added improvements in operational capability during the next fifteen years, geared to a developing enemy threat.

Minuteman III has the same gen-

Minuteman - The Best Is Yet To Be

By Irving Stone

WEST COAST EDITOR

eral configuration as its predecessors (*see box, page 25*). Its chief improvements are a new third stage and a new reentry system incorporating a post-boost control arrangement. This new third stage accommodates a heavier, sophisticated payload of multiple independently targetable reentry vehicles (MIRV) and penetration aids.

The vast jump in technology reflected in Minuteman III is illustrated by the original simple concept for Minuteman I, its refinement in the operational Minuteman I and Minuteman II, and the transition to the operational sophistication of Minuteman III. The Minuteman system originally was designed for a straightforward, single-faceted mission—massive retaliation, with all weapons to be launched in salvo. Each missile could be programmed for only two targets and could not

be retargeted remotely. In this sense, the missile force would be preset for response (see also page 36).

In 1961, in the midst of this highest priority development program, the operational concept was changed radically to embody an approach known as controlled, flexible response, involving the necessary introduction of a complex ground-support system. And this drastic operational change in Minuteman I was accommodated within the originally established deployment schedule. Controlled response called for a flexibility of control down to the individual missile, plus the added flexibility of substantially increased multitargeting. Thus, in-

and kick out a warhead to proceed along that path, then maneuver successively toward other targets, directing a warhead along each of these successive paths. And this reentry scheme isn't the ultimate refinement possible.

Refinement Capability

Planners in the Minuteman program constantly refer to the criti-

example, a sharp increase in enemy target hardness—made it necessary.

Command control could be improved to achieve even faster re-targeting. The reasoning is that it would be extremely difficult to determine which missiles would survive a first strike. Also, the command authority needs to know which enemy targets have been destroyed in a retaliatory strike. Hence, improving command control and communications by integrating them with an advanced early warning system could permit re-targeting in real time. Such a development likely is under way. Also, the command-control capability has been



stead of launching "the whole package," one of any number of missiles could be launched from any of the base deployments, while target options were simultaneously increased.

In the subsequent course of development, Minuteman II improvements added increased command and control capabilities, improved guidance, greater payload, and even more flexibility in targeting.

In turn, Minuteman III provides still greater payload, with increased accuracy and penetrability. Its MIRV payload can be maneuvered by its post-boost control system to head in a specific reentry direction

cal utility of this ICBM as part of the nation's triad framework (see also page 32). In this framework, the real strength of Minuteman lies in its accuracy and responsiveness to command control. These areas offer significant opportunity for upgrading over the next ten or fifteen years, depending on what new threats or defenses the opposition may pose.

Thus, while current targeting accuracy is good enough for existing conditions, it's conceivable that a zero circular error probability (CEP) might be attained within fifteen years if the requirement—for

extended to various alternative command posts, including airborne stations.

Future Slants

In addition to Minuteman, it's conceivable that, within the next ten to fifteen years, the Air Force could develop the nucleus of a manned deterrent force by using the space shuttle now projected by the National Aeronautics and Space Administration. In an operational concept, a manned, recallable, weapon-carrying spacecraft could be launched on warning to synchronous altitude and there await developments, or the spacecraft could be deployed on patrol in synchronous orbit. The latter operational mode would not be preferred because of the expense involved and the psy-

chological factor of nuclear weapons orbiting the earth.

A future facility concept relative to Minuteman that has been studied and tested is the hard-rock silo scheme (see June '68 issue, page 52). This effort, in substance, examined the design and use of a silo cored out of hard rock in a remote area for deployment of Minuteman III and later, for a follow-on, advanced ICBM. A hard-rock deployment, presumably, would substantially improve survivability because of the inherent hardness of the rock, deeper emplacement of the missile,

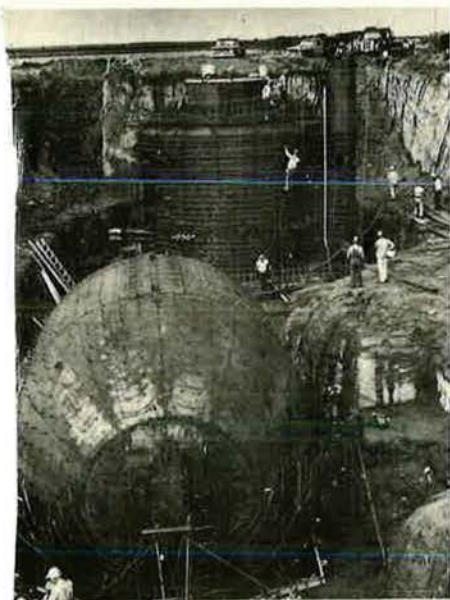
Mobile versions of Minuteman, which have been analyzed extensively in the past, are still not ruled out (see page 32). Study is continuing on both surface and airborne versions. Mobility introduces new problems. These include a lesser degree of security against sabotage and complications arising from citizens' reactions. Air launch may yet turn out to be the most attractive mobility scheme.

Problems, Management

Problems encountered with Minuteman III have been of the type normally expected in development

Another typical problem was in the connectors that link the missile's hundreds of miles of wire strands in cables. Any looseness in the wire-to-connector attachment created problems when subjected to flight vibration. Improved fabrication techniques eliminated the difficulty.

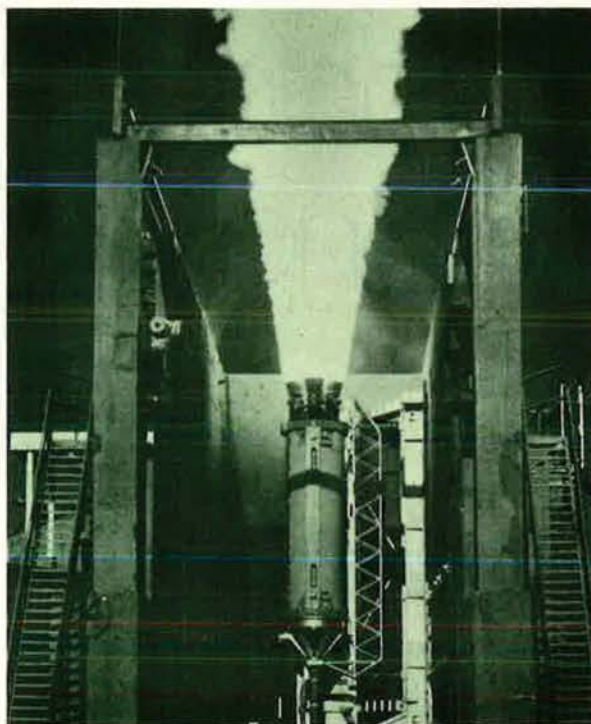
These are only two instances of hurdles overcome in the enormous task of procurement and validation. Overall, the missile could be considered the most complex engineering device ever put into production; after traveling an intercontinental



improved shock-resistant missile suspension, and a massive silo deck able to clear itself quickly of debris.

Subscale and full-scale tests were conducted early last year on typical hard-rock emplacements. And, although the effort has been dormant since the middle of last year, it undoubtedly provided valuable data for defense planners.

With the demise of the hard-rock effort, attention turned to a complementary analytical effort that began late last year. This involves the possibility of increasing the hardness of existing Minuteman sites, silos, and the missiles themselves. The cost of such increased hardening will be extensive, estimated at between \$500 million and \$1 billion.



Opposite page, left, the seventeenth and final Minuteman launched from Cape Kennedy, Fla., streaks from silo. Right, two Minuteman IIs salvo skyward from Vandenberg AFB, Calif. This page, left, Site Activation Task Force, now called Site Alteration Task Force, gets silo construction going at Grand Forks AFB, N.D. Right, testing of Minuteman solid rocket motors at Thiokol plant near Brigham City, Utah.

efforts and in missile operational environments. One significant development problem involved microscopic contamination, or "whiskers," in miniature circuits—chips, no larger than a fingernail. Constant vibration in these circuits caused the whiskers to vibrate and bring on short circuits, preventing the missile from following computer direction. The cause was a simple oversight. In the development phase, the miniature circuits, or chips, had been subjected to shake tests, but not of the order of those encountered in certain flight attitudes. The condition was remedied and has never recurred.

range, it must achieve an accuracy comparable to that of aircraft bombing operations. Failure rate for components is less than one in one million. And missile countdown flight reliability is far better than what was initially expected.

The magnitude of the management task is colossal. The Minuteman program costs approximately \$1 billion per year, or about \$3 million per day—roughly one-twentieth of the Air Force budget. The program has been kept within its budget for the past three years, and Minuteman III has stayed ahead of schedule during this period. ■



Prominent Air Force leaders and defense analysts discuss the fallacies of arguments for putting all our missiles at sea. For nearly a decade, US strategic deterrence has succeeded because of the triad concept of land-launched missiles, sea-launched missiles, and bombers. In the years ahead, the triad must be maintained, centered around its key element . . .

Minuteman- First Among Equals

By Edgar Ulsamer

ASSOCIATE EDITOR, AIR FORCE MAGAZINE

ON THE TENTH anniversary of its first launch, the Minuteman ICBM—in fact a whole family of modernized and improved missiles—shows no undue signs of either technical obsolescence or excessive vulnerability.

If the 1,000 Minuteman and fifty-four Titan ICBMs in the Air Force inventory have a weakness, it is, as USAF's Deputy Chief of Staff for Research and Development, Lt. Gen. Otto Glasser, and other defense planners see it, "their wide-open susceptibility to calculations of their vulnerability by anybody with a slide rule and a fundamental knowledge of structural engineering."

The land-based ICBMs are made to order for mathematical exercises using postulated enemy accuracy/yield factors far more effective than the "worst-case levels" US intelligence can glean from observing Russian test shots.

The other two members of the US deterrence

triad—SAC's bombers and the Navy's submarine missile fleet—defy mathematical "quantification," not because they are any more immune to enemy attack, but because, quite simply, they are different breeds of cats. They are mobile.

Some defense planners view current allegations about the obsolescence of land-based ICBMs as founded on "unrealistic and unreasonable assumptions about the CEP (circular error probability) of Soviet missiles, exceeding the most optimistic projections by American guidance experts concerning our own future progress." The facts are that the best intelligence data available indicate that the great majority—possibly as many as eighty percent—of the Air Force's ICBMs can survive a Soviet first strike. This means that more land-based missiles would survive and be available for retaliation than would the Polaris and Poseidons of our submarine fleet. One-third of our missile submarine force is always in port, fully exposed to the enemy's sea- and land-based missiles. While in port, the subs cannot reach their targets because of range limitations. Rather, they would draw enemy fire to densely populated coastal areas of the United States, including our two largest metropolitan and defense-industry areas. This is a factor usually avoided by the proponents of an all-sea-based deterrent concept, who prefer to focus attention on the claim that the ICBMs tend to draw fire to the nation's heartland while submarines draw fire away from our shores.

Dangers of Reneging on Triad

Advocates of a sea-based, single-system strategy, in the view of authoritative defense analysts interviewed by this reporter, engage in other forms of "intellectual legerdemain." One is the notion that placing the entire deterrent force at sea not only would lessen the danger of nuclear war but would confine it to uninhabited oceans. The sea-based-deterrence hypothesis also disregards the destabilizing effect of any single-system force that permits the enemy to concentrate his technology effort on gaining the ability to defeat the opposing single system in an all-out attack. If he has three different but complementary systems to worry about his problem has tripled, and he must think, not once but three times, before launching a first strike against the United States in the foreseeable future.

An even weightier case against a single deterrent system located outside of the national sovereignty can be made on grounds that it

invites a potential adversary to a "free try." If he attacks and succeeds in destroying the limited number of submarines on station, he is, of course, the undisputed winner. If he fails to destroy all or most of the US subs, the basic nuclear equation has not deteriorated appreciably from his point of view. The submarine fleet represents a relatively small number of "aim points," on which he has to expend only a small fraction of his total megatonnage. He has more than enough left to destroy the United States. (Conversely, an attack on the triad—consisting of the more than 1,000 hardened ICBM silos, the constantly shifting location of the strategic bomber fleet whose alert component would "flush" on warning, and the subs on station—increases his aim points to an intolerable extent.)

Ironically, the idea of taking nuclear war away from populated areas was first proposed within the Air Force. In the late 1950s, USAF planners, working with the Army Corps of Engineers, developed an elaborate scheme for burying the national missile force in the vast ice fields of Greenland. The plan was dropped when USAF reviewing authorities quickly detected the basic fallacy of relying on a single system and placing it outside of the national sovereignty. A few years later, a similar plan, for deployment in space, was put forth in the Air Force, providing for what was described to this reporter as a "shoot-out in cislunar space." It, too, was never considered seriously by the Air Force reviewing authorities, and for the same reason. That is, when our forces are outside our sovereignty, it may seem less likely to the Soviets that we would retaliate against an attack on those forces. The less likely the Soviets believe we are to retaliate, the more likely they are to attack.

Sonobuoy Seeding

Most Air Force planners agree with the majority of other defense analysts and support the triad concept. They support eventual development of the Navy's advanced-technology ULMS (improved nuclear submarines using longer-range missiles, which could be operational in the next decade as the current fleet moves toward obsolescence). But there is considerable doubt, on technical grounds, that such a force could long survive if it were the sole US strategic deterrent.

Numerous worrisome possibilities can be postulated. One is the possibility of improved antisubmarine warfare (ASW) technology, permitting the enemy to stealthily eliminate US submarines, one by one. Another is the idea of a massive enemy ICBM bombardment of the ocean quadrants where the Polaris/Poseidon fleet must operate because of the range limitations of its missiles. The range argument, of course, is cited in favor of ULMS

by its advocates. But, on the basis of information made available to this magazine, yet another technique looms as a potential threat to any submarine-launched missile force. Operating areas of the US submarine fleet could be seeded with air-dropped sonobuoys, possibly just prior to an attack. Sonobuoys have an effective detection range of about twenty miles in radius.

Suppose a network of buoys could establish the location of individual submarines with an error factor seven miles in radius. It can also be assumed that the one- to two-megaton warhead of the Soviet SS-11 missiles, detonated underwater, would destroy any submarine located within its lethal range of three and a half miles. Simple mathematics establishes that only four SS-11s need be expended to destroy one submarine. Because each submarine carries sixteen missiles, this is a pretty favorable exchange ratio.

Even doubling the margin for error to fourteen miles would mean only sixteen SS-11s to trade off against a like number of Polaris/Poseidon missiles. One for one is a good trade in the strategic missile business and, with each ULMS-type sub projected to cost more than \$1 billion, sheer numbers cannot be the answer. The obvious conclusion is that an enemy could reasonably expect to be able to launch a successful attack on the US submarine fleet and still maintain a strong restrike capability against the US proper as insurance against failure.

Minuteman III

More than any other strategic system, the Air Force ICBMs are geared toward deterrence of nuclear war—in the knowledge that "nobody wins a nuclear war." While an attack on submarines, if detected, can be viewed with a degree of ambiguity, an attack on the land-based ICBM force constitutes an unequivocal act of war. This consideration is often disregarded in evaluating the land-based missile system. There is a tendency to "war-game in the wrong direction," as General Glasser put it. National planners, and even the public, look at a given system in terms of "how does it win or lose a war, rather than analyzing its merits with regard to its ability to deter war," he said.

The ability to deter is the philosophy behind a systematic and flexible program designed to convince a potential aggressor—through this decade and the next—that an attack on the US land-based ICBMs cannot be successful and would lead to the destruction of his own country. In this effort the Air Force starts with two handicaps, both induced by political constraints. The first stems from the fact that the US has frozen the number of its ICBMs while the Soviets continue to expand their ICBM force. Yet proliferation is both the most effective and cheapest "textbook way" of assuring

continued survivability of our ICBMs in case of dramatic advances in Soviet technology. The greater the number of aim points, the harder for an enemy to destroy them, down to a level where the surviving missiles no longer constitute a significant threat.

The second restriction is not as precisely enunciated but nevertheless just as binding—the inability of the Air Force to build a follow-on system. While some experts don't consider the need for such a system as pressing—because of their high confidence in the Minuteman III system—others believe that a launch vehicle with a greater payload would be useful. General Glasser indicated that the so-called WS-120A—the large, solid-propellant missile under active consideration at the time the go-ahead on Minuteman III was being weighed—“would have been a very good option.”

When the Air Force decided to embark on the Minuteman III program, it did so hoping that this step would not interfere with the eventual development of WS-120A. Subsequent economic and political pressures, and the SALT talks, caused the Air Force to drop the program and confine its own research concerning advanced missile systems to a very low level—about \$6 million in the current year. The advantages of WS-120A, in some views, stem mainly from its ability to increase the number of warheads and penetration aids the missile can carry. Increasing the number of warheads substantially beyond the three carried by Minuteman III is, however, not desirable because it reduces the number of “aim points” an adversary must cover below the necessary levels, according to General Glasser.

These two constraining factors notwithstanding, the Air Force considers the viability of the silo-based ICBM as “assured for this decade and into the next, in the light of our current upgrading programs,” as General Glasser put it.

In the more distant future, a series of options can extend the survivability of follow-on systems almost indefinitely.

Minuteman—Evolutionary and Flexible

The advantages of an advanced ICBM developed concurrently with the Minuteman III notwithstanding, the consensus is that Minuteman III has proved to be “outstandingly successful, performing better than expected.” AFSC's Deputy Chief of Staff for Development Plans, Brig. Gen. K. R. Chapman, termed the system “truly superior; so good, in fact, that it provides us a wide range of options with regard to different front ends [reentry vehicles]. This, in turn, could give the national command authority considerable flexibility in the actual use of the system.”

Beyond that, the Air Force evolved a phased program to compensate for potential future

improvements in Soviet missile accuracy. The first phase is called the Upgrade Silo system and is being implemented right now. It will increase the protection of the Minuteman ICBMs to a level several times greater than at present. (See AIR FORCE, Nov. '70, “The ICBMs Remain the Bulwark of Our Deterrence.”) The program's second phase involves a point-defense system for some or all ICBM installations, and is currently under review by the Department of Defense's Defense Science Board. The Board is expected to reach a decision soon as to what such a system should include.

Initially the Air Force felt that a point-defense system should be operated as an integral element of the Minuteman force. But this policy changed recently to one “where we recommended a priori [to Deputy Secretary of Defense David Packard] that the Army should manage the system because it represents an extension of Safeguard,” an Air Force spokesman pointed out.

The Defense Science Board is using both Air Force and Army recommendations concerning the technical configuration of this “hardsite” defense system. The basic difference between the two service proposals is that the Air Force recommends an actively guided system designed to intercept enemy warheads at relatively low altitudes, whereas the Army prefers a technique much like that of Safeguard. Both services recommended nuclear warheads for the interceptor missiles, but the Air Force approach, General Glasser said, is susceptible to eventual evolution “to a nonnuclear kill mechanism, because of the greater accuracy potential inherent in active guidance.” Actual deployment of hard-site defenses is not deemed necessary at this time and can wait until there is evidence that the Soviets have achieved dramatic improvements in their guidance technology.

USAF planners stressed that the current upgrading of the Minuteman silos and the eventual deployment of a hard-site defense are mutually complementary, and ensure the deterrence capability of the land-based missile



Present techniques of transporting ICBMs point the way toward advanced forms of mobility include trucking, GEM transporting, and air launching.

force "for many years to come." The two together produce a "synergistic effect," meaning their combined benefits are greater than their arithmetic sum. If it is found at some future date, for instance, that the warheads of the enemy's ICBMs have become so accurate that the upgraded silos can no longer furnish protection, the hard-site defense system will assure survival of the ICBM force. Such a system can detect and intercept more efficiently if the "threat tube"—the terminal trajectory—of the incoming warhead is narrowed by more precise aiming.

If the enemy then attempts to overcome the hard-site defense by making his warheads maneuverable, "he can't help but degrade his CEPs to a point where the upgraded silos once again provide adequate defense," General Glasser said. Technological advance can be expected to invalidate these conditions eventually, but there is little likelihood that this will be the case within this decade. As a result, "we can look toward the future with a reasonable degree of comfort, even in case of the worst superthreats" that are being postulated in war games, General Glasser said.

The ABRES Options

While the mortality rate of the US land-based missile force in case of a first strike against it does not appear to be as high as suggested by proponents of other systems, there is little doubt that the toll would be significant. It is necessary, therefore, to assure that the surviving force will be able to penetrate enemy defenses.

A triservice program, overseen by DoD's Advanced Research Projects Agency (ARPA) and known as ABRES (for advanced ballistic reentry system) is doing just that. Currently funded to the tune of \$100 million annually, it has already produced prodigious results. Paramount may be the fact that the program, according to authoritative defense officials, not only has established the feasibility of both terminal-guidance and maneuverable reentry vehicles but also has completed the basic research and development work requisite for producing such systems.

ABRES research has also led the way to "very high 'betas,' and points toward even greater improvements," General Glasser said. The "beta," also called ballistic coefficient, measures the aerodynamic efficiency of a falling body. A high beta can reduce a reentry vehicle's flight time appreciably. (The first Minuteman warheads were slowed down to subsonic speeds by the atmosphere, whereas present terminal-speed capabilities are believed to be at least ten times greater.) High speed also improves warhead accuracy because it shortens the flight time through the atmosphere, reduces the effects of wind and other climatic

conditions significantly, and shortens the time of exposure to interception.

Other evolutionary advances resulting from the ABRES program, according to USAF spokesmen, include refined guidance technologies and extremely flat reentry angles, which hamper detection by the enemy. Additionally, ABRES and USAF research is concentrated on post-boost vehicles that can furnish a "depressed trajectory," which also hinders detection. Perhaps the most ambitious technique currently under study involves extending our ability to "recall" our own ICBMs, thus enabling the National Command Authority to "launch on warning," while still retaining the option to cancel the action later on.

(From what is known of Soviet technology, there is good reason to believe these options also are open to the Soviets.)

Mobile ICBMs

A number of schemes are currently being explored for making future generations of Air Force ballistic missiles mobile. These include the possibility of deploying ballistic missiles of an advanced type on large aircraft, which would flush on warning and thereby remain immune to a first strike. Also under review are various forms of ground mobility, including continuous-roaming missiles using either trucks or ground-effect machines (GEM). Also under consideration is the so-called "shell-game" concept, whose underlying idea is that each missile has access to as many as nineteen different launch sites. On warning, the missile would be rushed to one of them. The enemy, of course, has no way of knowing at which site the missile is located, and must target on all nineteen sites.

This approach might not prove effective, however, if, by the time such a system is operational, the enemy has acquired sea-launched missiles operating with a depressed trajectory and high-beta reentry warheads. In such a case, some planners believe there may not be enough time to transport the ICBMs out of the lethal zone, especially if relatively slow trucks are used. For this reason, air mobility may prove advantageous despite obviously greater cost and technological difficulties.

These options, and others that can't yet be talked about publicly, provide ample grounds to state, on this tenth anniversary of Minuteman, that USAF's ICBM missile force, in one way or another, can provide "assured deterrence" for as far into the future as technologists can see. Asked if there are any conditions under which the Air Force ICBMs might lose this capability, one prominent defense analyst told this reporter: "Only one: If the enemy could reduce our warning time to zero. But this is, from his point of view, an impossible dream." ■



The Minuteman Decade

In the past decade, the evolutionary growth of Minuteman, other technical advances, and a drastic change in the balance of strategic power have combined to create both the potential and the requirement for still greater flexibility in our strategic deterrent forces. Superiority in battle management—the ability to adjust instantly to the unforeseen contingencies of global, hypersonic conflict—will be a key to successful deterrence in the future. This suggests that all strategic combat and support forces should be organized for complete unity of effort, and raises the question . . .

Why Not a Unified Strategic Command?

By John L. Frisbee

SENIOR EDITOR/PLANS AND POLICY

FOR THE PAST quarter century, nuclear weapons and the potential for nuclear warfare have dominated international and military affairs. Without a doubt, more study has been devoted to nuclear war in those years than has been given to other kinds of warfare throughout the long span of recorded history.

As a result of this compressed and intensive effort, the concepts, strategy, and tactics of nuclear war—more accurately, of deterring nuclear war—have undergone an evolution comparable to that of traditional military science from the days of the longbow to the development of military airpower. That evolution has been a compound of quantum leaps: tons to kilotons, kilotons to megatons, subsonics to hypersonics, line-of-sight to global-detection ranges, area to worldwide communications, punch-card data handling to parallel-processing computers.

After all this, the United States now faces the most serious military threat in its nearly 200-year history. The ultimate purpose of the Soviet strategic buildup, which we must continue to deter, is debatable. It could be to destroy this country physically. More likely it is to isolate and neutralize the US as an independent power center, and eventually to dominate us through the bargaining power of nuclear superiority.

Meeting this threat probably will require a large investment in additional strategic forces. There are imponderables, of course, among them the outcome of the Strategic Arms Limitation Talks (SALT) and the direction and

pace of future Soviet technical advances. It certainly will require a further involvement of strategic force management. The groundwork for that step has been laid, though less rapidly and completely than it might have been. How that happened is worth a look back. Where it may lead deserves a look ahead.

The Major Objective

So far as the United States is concerned, the major objective of all the studies, analyses, research and development, deployments, and training connected with US strategic forces has been to assure that a nuclear war never happens. That broad objective has had the almost-unanimous support of the American people, in and out of uniform, in and out of government. There has not been comparable unanimity on subsidiary objectives, or on how to achieve either the major or related goals of deterrence.

For example, one school of thought has believed the best deterrent must be strategic forces clearly able to defeat an attacker. Others believed that there could be no meaningful victory in nuclear war; a nuclear battle, they said, would be suicidal and, in any event, technically impossible—particularly after intercontinental ballistic missiles came into the picture. These people reasoned that the only rational deterrent was one based on a small number of secure missiles that could destroy an attacker's cities in a second-strike salvo. The two positions were extremes of the spectrum. There have been many variations of each in between.

The majority of those responsible for planning and managing US strategic forces thought the ideal deterrent should be able to do several things. It should prevent an attack on the US by confronting the USSR with a guaranteed response that would do "unacceptable" damage to that country. It should be able to limit damage to the US. It should discourage an attack on our allies and keep low-intensity wars from escalating to large-scale conventional wars and perhaps thence to nuclear war. All of this was associated with a broad range of American responsibilities: defense of the US proper, commitments to allies, and a policy of containing the forceful extension of Communist domination beyond its existing sphere of control.

Massive Retaliation

In January 1954, Secretary of State John Foster Dulles sketched out a nuclear strategy that came to be known, somewhat inaccurately, as Massive Retaliation. In suitably vague terms, he suggested that the United States would respond to any overt Soviet threat to our internal or external interests by a nuclear attack on the USSR "at times and places of our choosing." That policy was generally consonant with the broad concept of deterrence described above.

Massive Retaliation was never discussed publicly in detail. Since there was little likelihood that US bombers could pull off a surprise attack on Soviet strategic forces based deep in Russian territory, Massive Retaliation was generally taken to be a countercity strategy. At the time of its announcement, it was both safe and effective, since the USSR would have had little ability to respond with a second-strike nuclear attack on this country. But the situation changed rapidly as the USSR moved from atomic to thermonuclear weapons and improved and expanded its long-range bomber force. By the late 1950s, Massive Retaliation had lost much of its appeal. If deterrence failed, we were up against an unappealing, two-sided, city-busting, people-killing war. Intercontinental missiles were just over the horizon—a prospect that made mutual city-busting even less attractive.

In early 1960, a group of Air Force planners headed by Brig. Gen. Noel F. Parrish began to develop a new and theoretically more rational concept of deterrence. The idea was to confine nuclear strikes to military targets, holding collateral damage to urban areas at a minimum. The strategy was known as Counterforce.

Assured Destruction

Soon after Robert McNamara became Secretary of Defense in 1961, he briefly adopted

Counterforce as the announced US nuclear deterrent strategy. Within a few months, that strategy was rejected as being technically infeasible. A campaign against enemy strategic forces—even if tacit mutual agreement to limit the action were possible—could be expected to last for days or perhaps weeks. To be really effective, it would need weapon systems, reconnaissance, command and control, and battle-management capabilities that didn't exist. So Mr. McNamara turned to an Assured Destruction strategy that can be best described as Second-Strike Massive Retaliation.

That shift took place at a time when many of the capabilities needed for sophisticated battle management were, or were becoming, technically feasible. Outside the Air Force, lack of high-level enthusiasm for more flexible strategic forces and doctrines slowed the development of these capabilities by several years.

In any event, by 1963 the issue of a flexible deterrent strategy, as opposed to the rigid Assured Destruction, seemed somewhat academic to many people. By that time, an increase in SAC's bomber force and the introduction of land-launched and sea-launched ballistic missiles had given the US such a wide margin of nuclear superiority that a Soviet attack on this country was almost inconceivable.

Now, in 1971, that no longer is true.

Balance of US and USSR Forces

It is not necessary here to describe in detail the current balance of US-Soviet strategic forces. The salient facts are that the USSR now has between 1,300 and 1,500 land-based strategic missiles, compared to our 1,054. Our larger bomber force is balanced off by their much more extensive and technically sophisticated air-defense system. Under currently estimated schedules, the USSR will cancel out our lead in submarine-launched missiles within the next five years. They have, and we are beginning to deploy, a limited ballistic missile defense system. The relative status of US and Soviet antisubmarine-warfare (ASW) forces is a closely held secret—if it is known at all.

Today, and for the next three to five years, there is little doubt that enough US strategic offensive forces to destroy the USSR would survive a Soviet first strike. Beyond that time, even assuming that force levels of the two sides remain in rough balance, there can be less assurance that a US deterrent force, supporting an Assured Destruction strategy and managed according to present concepts, will continue to be successful.

Measures can be taken to improve the survivability, penetration capability, and accuracy of our missile force. Some of them (*see page*

32) already are under way. But an important and often overlooked point is that the nature of a nuclear exchange, which we must plan to deter, has changed drastically within the past two or three years. Concepts and organizations, as well as hardware, need to be reexamined.

When Assured Destruction was adopted, the nuclear exchange then envisioned was marked by a high degree of automaticity. If deterrence failed and the Soviets launched a surprise first strike, we would respond against preplanned targets with virtually no flexibility so far as the missile force was concerned. It was assumed that the Soviets, in turn, would hit our remaining cities with forces they had held in reserve. Little attention was paid to the McNamara corollary to Assured Destruction—that is, Damage Limitation. This, admittedly, is an oversimplification of the then-prevailing nuclear-exchange concept. But it was an exchange—not a battle in the sense of a continuing, fluid engagement. About the only opportunity for flexible tactical maneuver lay with SAC's bomber force.

Now technology is bringing us close to the time when a nuclear war would approach the fluidity of a traditional battle. We must be prepared to meet vastly more varied attack patterns if we are to deter successfully through the recognized ability to preserve an effective Assured Destruction force. An enemy's perception of our willingness to defend vigorously will depend to an indeterminate degree on our ability also to limit damage to this country. This is not to suggest a return to Counterforce, but merely an adaptation of Assured Destruction and Damage Limitation to a different strategic environment.

Changes Since the Early 1960s

A few examples of the technical advances that have taken place since the early 1960s will highlight the changing nature of nuclear war and its prevention:

- Eight or ten years ago, missile accuracies were not good enough to make missiles very useful against time-urgent targets such as enemy missiles held in reserve. Today, missile accuracy is from six to twelve times better than a decade ago. In the future, circular error probabilities (CEPs) of a few feet are technically feasible through improved guidance.

- In the early 1960s, there was no way to get immediate information on which enemy missile silos were empty and which were still loaded. Reconnaissance satellites and other electronic devices now can provide real-time intelligence. Immediate battle-damage assessment is possible.

- Early missiles could not be reprogrammed rapidly to shift from a less-urgent to a more-urgent target, or from a destroyed to

a live target. Today rapid, but still limited, re-targeting is here. Tomorrow re-targeting to a large number of aim points within range of a given missile can be achieved.

- Ten years ago, SAC's command and control systems, while extensive, were vulnerable to nuclear blackout. Now, redundancy and a multiplicity of communications modes have solved that problem and made the system safe from complete negation by enemy action.

- Computers of a decade ago could not handle the tremendous number of split-second calculations that would have to be made by the staff that managed the engaged nuclear forces. Today's computers can.

- Destruction of a ground-located launch-control center formerly could neutralize several missiles. Now missiles can be launched if necessary from a secure airborne command post. Soon it will be possible even to reprogram them to new targets from one of the aircraft making

Minuteman can be launched from airborne command post; soon will be targetable from aloft. Wingtip in foreground definitely is not that of Looking Glass.



up SAC's Post Attack Command and Control System (PACCS).

- Several years ago, all Soviet missiles launched against targets in the US would have followed predictable ballistic trajectories and would have approached through well-defined corridors. Now fractional orbital trajectories and Soviet submarine-launched missiles give them the ability to attack from many directions—an all-azimuth attack. Maneuvering warheads and depressed-trajectory attack from submarines are future possibilities that are technically feasible. Our warning times have been reduced, our defense perimeter expanded, and the need for very rapid, perfectly coordinated response increased.

- US ballistic missile defense, only a dream ten years ago, will become operational by the mid-'70s. A limited Soviet BMD system is already operational. In order to avoid interference between our own offensive and defensive

systems, the closest coordination will be necessary. Similarly, the timing of US offensive missile launches and bomber penetrations must be closely controlled to prevent one of our warheads, detonated over an enemy target, from destroying another US warhead.

Skillful Battle Management

The number of feasible scenarios that can be projected for the late 1970s is almost infinite. It would be futile to guess at a preferred enemy attack plan or at the range of variables that should be considered in a nuclear battle of the future. It is certain, however, that rigidity has given way to fluidity. The time is not far off when a numerically equal, or even inferior, force may be able to defeat an opponent through skillful battle management—the ability to adjust rapidly to unforeseen contingencies by handling instantly the millions of bits of information that would form a coherent picture of a hypersonic global nuclear engagement. If the Soviets were to develop that capability before we do—or do it better than we do—US deterrence would, indeed, be on shaky ground.



All of this suggests, rather pointedly, that operational control of all strategic forces should be vested in *one* command under *one* commander. While operational planning for strategic deterrence forces is now done by a unified staff, the execution of plans still is parceled out to several commands—SAC, the Navy, and the unified theaters. Land-based strategic defensive forces work in close cooperation with offensive forces but also are under separate command.

Unified Strategic Command

Fortunately, the foundation for a unified strategic command has existed for several years. One element is the Joint Strategic Target Planning Staff (JSTPS), established by Secretary of Defense Thomas Gates in August 1960. Under policy guidance of the Joint Chiefs of Staff, the JSTPS is responsible for preparing the National Strategic Target List and for drawing up a Single Integrated Operational Plan (SIOP) that would direct all US nuclear-capable forces in an initial response to an enemy attack. The staff also prepares the National Strategic Reconnaissance List and a Coordinated Reconnaissance Plan.

The JSTPS is located adjacent to SAC Headquarters, at Offutt AFB, near Omaha, Neb. It is headed by the Commander in Chief of SAC, with a Navy three-star officer, presently Vice Adm. Frederick H. Michaelis, as its deputy director. The staff includes people from all the services as well as representatives of the unified and specified commands and of some NATO countries. The JSTPS has its own Scientific Advisory Group and is supported by SAC's peerless computer resources.

The SIOP provides for alternatives that could be anticipated in the event of an attack. But no one who has studied warfare or seen combat would expect that all the situations of a rapidly moving global battle could possibly be foreseen. One would expect, in fact, just the opposite. So efficient battle management of nuclear forces will require continuous, two-way, real-time communications between a secure battle staff and individual combat, reconnaissance, and support units and crews, as well as

1. CINCSAC works the computer on airborne command post, Looking Glass.
2. Navy submarine-launched missiles must be responsive to central command and control.
3. Looking Glass battle staff can manage all strategic forces if ground centers are hit.

upward communications with the national command authority.

Again, these related capabilities have been developed by the Strategic Air Command over a period of twenty-five years. They include three major elements. The first element, basic to the others, is the SAC worldwide communications system that has been developed at a cumulative investment cost of about \$3 billion. SAC communications experts who have played the aggressor role in war games say that, even with their complete knowledge of the system, they can find no way to put it out of business. Its effectiveness can be degraded, but it can't be destroyed.

Command Post Facilities

The second element is command post facilities. SAC's large underground command post is vulnerable to a direct hit. Its airborne Post Attack Command and Control System (PACCS) is as invulnerable as any system could be. PACCS assures survivable battle management if the underground command post should be knocked out. The system includes the SAC Airborne Command Post (Looking Glass), Auxiliary Airborne Command Posts (AUXCPs), and radio-relay aircraft. A Looking Glass aircraft has been in the air continually for about ten years. Backup command-control aircraft are always standing by in case of mechanical difficulties. Since Looking Glass went into operation in February 1961, there have been only a few brief periods, of minutes only, when a battle staff was not airborne and operational.

The battle staff aboard Looking Glass is trained to manage forces engaged in a global nuclear conflict and to make operational decisions that could not be anticipated by the planners. Recently, the Department of Defense directed that an RCA VIC-36B computer be installed in Looking Glass for test and evaluation, with an eye toward equipping some elements of an improved PACCS fleet with computers. The computer, which can be interrogated in plain language, will handle 100 million bits of information. The initial test model has to be updated manually while airborne, but updating of information soon will be done automatically from ground installations, other aircraft, and satellites. As an example of its usefulness in battle management, the VIC-36B takes about a minute to solve a complicated retargeting problem that an experienced battle staff could not do manually in several hours.

Airborne Battle Staff

The third element of SAC's battle management capability is its top-level battle staff that serves in the underground command post and

aboard Looking Glass. These officers and airmen are operationally experienced, carefully trained, and frequently tested through practice alerts and war games. Every rated general officer in SAC serves frequently as director of the airborne battle staff aboard Looking Glass. Battle staff members are recruited from the subordinate-level battle staffs that SAC maintains at each organizational level down to and including the wings. The command, control, and execution systems for battle management have become so complex that battle staff duty is a full-time job—a career specialty—for some men. The breadth and depth of this particular SAC battle management resource surely is not equaled anywhere in the world.

A completely unified, unfragmented strategic command, functioning under the policy direction of the Joint Chiefs of Staff, would have advantages other than comprehensive, efficient battle management. Its jointly manned staff should be able to do a more effective job of developing and supporting force programs than can three separate services, each with one or more pieces of the strategic offensive/defensive mission. All weapon and support systems would receive equal treatment, and the strengths and weaknesses of each could be examined with professional objectivity, free from the stresses and strains of competitive—often abrasive—public debate. There might even be some considerable saving in manpower and overhead costs, but the primary objective should be operational efficiency—not economy.

None of the services has openly displayed great enthusiasm for a unified strategic command. Undoubtedly, each service would lose some cherished prerogatives and perquisites. It is reasonable to suppose, for example, that CINCSAC would be the first commander in chief of the new unified command. His knowledge of planning and command-control assets that now exist in SAC and the JSTPS would be invaluable in directing the difficult task of staff and command integration. There is no reason to suppose, though, that subsequent commanders in chief always would be Air Force men. The commander in chief should be selected, not on the basis of his parent service, but because of his experience and ability to command wisely what would be the most powerful military organization in history.

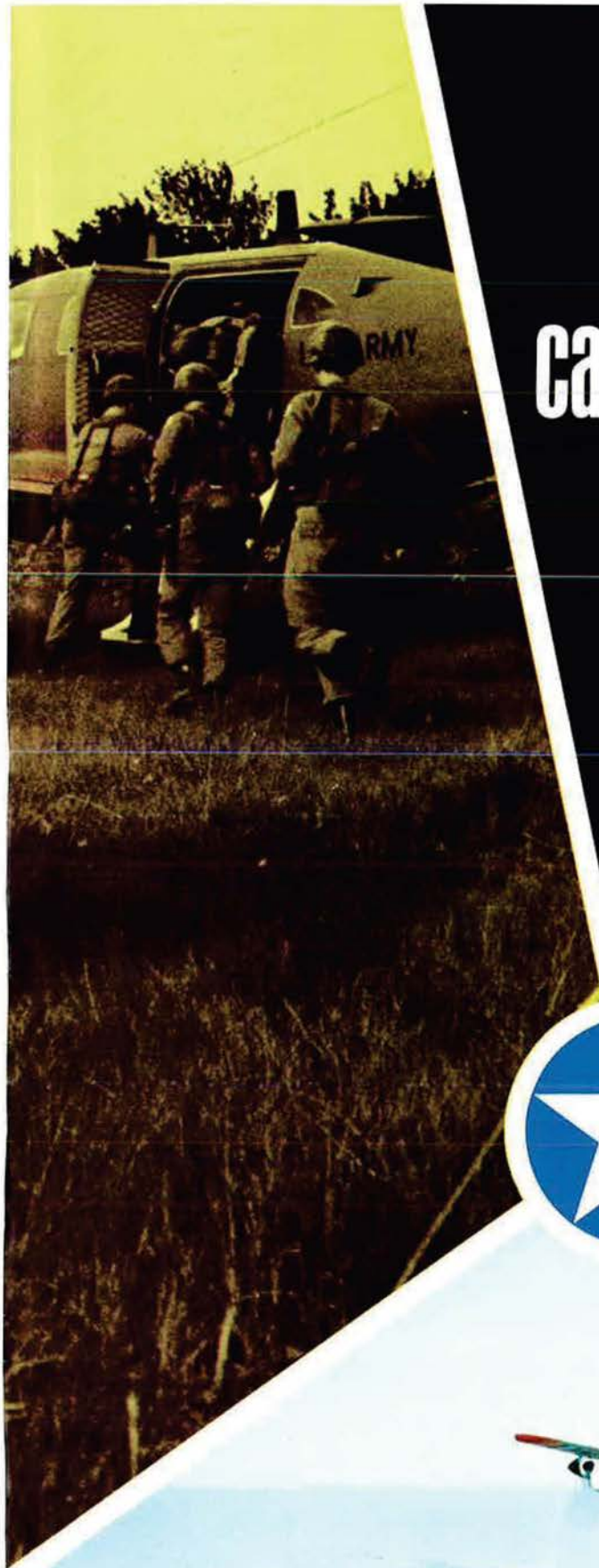
This country now has had many years of experience with military organizations unified on both geographical and functional bases. On the whole, that experience has been good. Why not complete the process by unifying our strategic forces—the forces that require the most detailed coordination, and on which the survival of this nation and the protection of its vital interests depend?

Each of the services might lose some measure of autonomy in the process. The nation as a whole would be the winner. ■

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This turboprop Beechcraft U-21A is a good example. As versatile as the men who fly it, the U-21A is used in different configurations for a variety of utility and indirect support missions. Cargo, troop transport, air ambulance, staff transport and highly specialized classified operations are currently being performed.

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In service in Vietnam since 1963, a fleet of Beechcraft U-8F transports has had high utilization. 80 to 90 hours per plane average per month have been logged carrying thousands of passengers and tons of cargo throughout Southeast Asia.



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- Range* 1,245 miles
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Like all Beechcraft twin turboprop aircraft, the King Air 100 can be made quickly convertible for multi-mission versatility...for personnel, cargo, ambulance service or special missions. It is in steady production now for off-the-shelf availability.

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Beechcraft XA-38

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Beech AEROSPACE DIVISION

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Meet the New Chairman . . .

Representative Hébert of Louisiana, thirty years in Congress, now is in charge of the House Armed Services Committee. An ex-newspaperman, maverick Democrat, and undisputed inquisitor, he is a staunch friend of the armed services of the United States, albeit a critic when a critic is needed. Meet . . .

The Hawk Who Wants Peace . . . Like a Dove

IN F. EDWARD HÉBERT, the House Armed Services Committee has a new chairman who is equal in stature to his predecessors—Carl Vinson and L. Mendel Rivers—as an advocate of US military power. He also brings to the job an incontrovertible reputation as a nonconformist Democrat. His maverick political tendencies are self-admitted, and, for a congressman from his part of Louisiana, highly successful.

In a recent interview, he was asked to evaluate the threat to US security. Mr. Hébert (whose name is pronounced “A-bear”) replied that, in his opinion, there is a limit to how far the Russians will go in crossing the US.

“If you look back over the years to World War II,” he said, “to the days since they mouse-trapped Franklin Roosevelt at Yalta, you will find they now control more real estate than at any time in history. Yet not a single Russian soldier has died on foreign soil. They do not fight foreign wars. But they are highly successful at making sure we have to do it, in places like Korea and Vietnam.”

On the political front, it is almost enough to say that Mr. Hébert is a voice out of the conservative South, and let it go at that. The Americans for Democratic Action gave him a

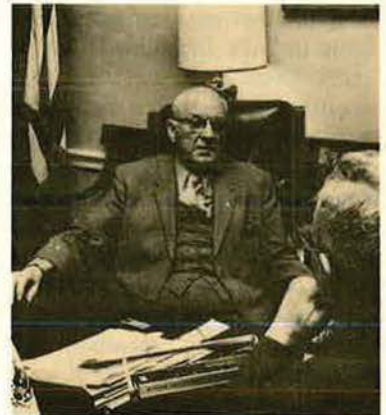
By Claude Witze

SENIOR EDITOR, AIR FORCE MAGAZINE

score of only seven percent in their 1969 evaluation. The Americans for Conservative Action say the figure, from their viewpoint, was sixty-four percent.

The record shows that he supported Louisiana’s favorite presidential candidate in 1948. That was Strom Thurmond, who bolted his party that year. Mr. Hébert’s critics then charged that not only had he abandoned his own Democratic party, but that, in Congress, he was voting with the Republicans. Mr. Hébert responded that he was “glad that observation has been made. . . . I don’t care whether legislation is sponsored by Republicans or Democrats.”

The new chairman had strong disagreements with Harry Truman, when Mr. Truman was President, and was a warm admirer of Dwight Eisenhower. President Nixon’s recent proposal to return some federal tax revenues to the state and local governments is a response to a prob-



Once a newspaperman himself, Congressman Hébert is at ease facing any reporter’s questions.

lem that Mr. Hébert says he recognized almost twenty years ago.

It may be that the most important thing about Eddie Hébert (it is always “Eddie” around the halls of Congress) is the fact that he still thinks of himself as a newspaperman on leave from the city room. That leave began in 1940, when he was elected to the Seventy-seventh Congress after almost twenty-five years as a reporter and editor. He became city editor of the *New Orleans States* in 1937 and gained a national reputation for his part in the newspaper’s campaign against the remnants of the Huey Long machine. As a former investigative po-

litical reporter, he has relished his newer role as an inquisitorial congressman.

He said recently that he plans to retain chairmanship of the Armed Services Subcommittee, which conducts special investigations. It is a post he held for many years under both Mr. Vinson and Mr. Rivers. In recent years, Mr. Hébert pointed out in the interview, the subcommittee has drifted away from "straight" investigations. It is his intent to get it back on the path.

What will he investigate? "Any complaint involving charges, contracts, or that sort of thing."

Mr. Hébert was, of course, chairman of the special subcommittee that in 1969 and 1970 investigated the My Lai massacre. In its report, his panel accused the Army of "covering up" the incident. It was in the years from 1955 to 1963 that the chairman achieved a reputation as a prober into weapon-system management, alleged overcharges by defense industry, the employment of retired military officers by defense industry, and a number of other subjects. Some of them have been rediscovered in more recent years by more junior members of the House and Senate.

Mr. Rivers once called Mr. Hébert "the most experienced and hardest-hitting investigator in the Congress." At the same time, he achieved a reputation for being fair, and not even the military-industrial complex has had a complaint.

He told AIR FORCE Magazine that he adheres to the Mendel Rivers philosophy in this regard. "The military-industrial complex is part of us, a necessary part," he said. "If the day comes when we are attacked, we better hope to God that the hardware



FDR visits Antoine's Restaurant in New Orleans, 1936. Eddie Hébert, newshawk, is standing at far right.

made by the military-industrial complex works. We need those people and have to keep them alive."

He added that "the aerospace business is a peak and valley business, made that way by the customer. You can't expect private industry to put up all the support for something when there is only one customer with a widely fluctuating demand.

"But as for unconscionable prices? They're out the window. Congress cannot stand still for that."

At the top of the Armed Services calendar for the Ninety-second Congress stands draft legislation, and Mr. Hébert has chaired a special subcommittee on the subject.

"The draft is our first order of business," he declared, "and as far as I am concerned, it must be extended. I don't think a volunteer army is feasible; I don't think it is practical."

Does he agree with Senator John Stennis, his counterpart on the other side of the Hill, who has called the volunteer army "a flight from reality . . . impossible to achieve?"

"Yes, Mr. Stennis and I share the same views on the draft. Now, to say I don't want a volunteer army is wrong; I want a volunteer army. I

want a pot of gold at the end of the rainbow. I want utopia. But I can't have it." He continued, asserting that the volunteer army idea "provides beautiful political talk, but it's just holding out the promise of pie in the sky." The whole subject, Mr. Hébert said, had been gone over thoroughly in the 1967 draft hearings when there was a volunteer army plan offered in the House, and defeated.

Only two weeks after the death of Chairman Rivers, Mr. Hébert released the transcript of his hearings, held last year, that reviewed recent administration of the draft law, which expires July 1. He has recommended that the full Armed Services Committee act on military manpower levels and pay adjustments at the same time it considers draft law extension.

His subcommittee also is critical, as is Mr. Hébert, of some of the federal judiciary. He finds "an evident unwillingness to enforce the draft law . . . [and] continued failure to require violators of the draft act to be sent to prison." The report singled out federal judges in the northern districts of California and in Puerto Rico. It called their action "unconscionable" and indicated the

full committee may wish to consider limiting the latitude judges have in determining penalties for violators.

Mr. Hébert's study also finds that the initiation of a lottery draft did not result in "any increased equity" or "alleviate the sense of uncertainty" for registrants. And, the so-called calendar year of prime vulnerability has been extended to fifteen months for many registrants.

As a personal top priority, Mr. Hébert lists his proposal, already tagged H.R. 2 in this Congress, to establish a Uniformed Services Medical Academy. On the day of the interview with AIR FORCE Magazine, the Defense Department recommended a renewed doctor draft because too few medical school graduates have volunteered for military service.

Here are some Hébert views on other topics:

- He is satisfied with the Nixon Administration effort to get us out of Vietnam. "I believe we are on our way out," he said, "but that is the way it has to be. He [Nixon] has to get out; we can't fight a war to win any more. We should have won this one years ago. Thousands of Ameri-

can kids have lost their lives in vain." He also is on record as favoring resumption of bombing over North Vietnam if that will assure the safety of US troops.

- "Anyone who tries to estimate what we will 'save' once the war in Vietnam is over ought to have his head examined. You can't tell what you are going to save, if anything. The inflationary spiral is going up every day. Anyway, I think of the military budget, not in terms of dollars and cents, but in terms of national defense. No savings will be worth a damn if we lose this country. The threat of war will continue."

- Asked about current rumors that the US Navy hopes to dominate Pentagon activity in the next few years, taking much of our nuclear deterrent to sea, Mr. Hébert responded with the conviction that no service should dominate. "I've always been strong for the mixed force," he said, "and I will continue to back the mixed force. The thing that really bothers me now is that the Navy has fallen behind. Mr. Rivers and myself have been saying for years that the Navy has become obsolescent. We have screamed to

Candid shots show the outspoken new chairman of the House Armed Services Committee at ease. Thirty years in Congress have crowded his office with mementos of public service.



high heaven about that. We put money in the 1971 authorization that was over and beyond what the Administration requested. We also wanted them to modernize the Navy." He cites a speech made by Mr. Rivers on the House floor last fall, "in which he depicted exactly what the Soviet Union is doing in the Mediterranean, home of our Sixth Fleet. I think Russia has only one ship that is more than twenty years old. She is projecting herself into being a world naval power."

- Looking at the Air Force, the new chairman finds "we have fiddled and quibbled and twiddled our fingers while Robert McNamara played with the advanced bomber (AMSA) requirement for all those years, and there still is no follow-on bomber for the B-52. The B-1 is in development, and it should be in production, right now. At this point, in fact, we are only talking about building a prototype. A similar story holds for our Army. None of the armed forces [has] been permitted to keep up with the times so far as hardware is concerned."

- Back on the subject of money and the defense budget, Mr. Hébert

CREED OF A CONGRESSMAN

Creed of a Congressman, F. Edward Hébert of Louisiana. Edited by Glenn R. Conrad with a biographical sketch by Virginea R. Burgières. The USL History Series, University of Southwestern Louisiana, Lafayette, La., 1970. 216 pages, including notes and index. \$5.95.

Mr. Hébert, who will be seventy years old next October, has so many people in Louisiana who are proud of him that it is hard to believe one book can hold all the tributes, but here are many of them. Now a veteran of thirty years in the House of Representatives, he is at a point in his career where political seniority is beginning to pay off.

Glenn R. Conrad has done the research for any of us who want to trace the development of Mr. Hébert's philosophy. He has combed the quotes and grouped them into chapters on America, international relations, and the political arena. Most of the quotations exhibit wisdom and common sense. Some are salty and sharp.

Mrs. Burgières, who has worked for Mr. Hébert in New Orleans, provides a somewhat adulatory biography. Our favorite anecdote involves the reporter who asked Representative Hébert, "Can I quote you?" The snappy reply: "I said it, didn't I?" That's refreshing. —C.W.

shows short patience with "people who are phrase happy, who make blanket statements when they should know better. They talk about saving \$20 billion. That means you stand still. The other \$50 billion goes for personnel, maintenance,

and operations. These are fixed expenses. You can't change them. You can't change the \$2.5 billion that will increase military salaries."

During the McNamara regime at the Pentagon, there was a running conflict between the Secretary of Defense and Congressman Hébert. Mr. Hébert's biographers claim that, in those seven years, Mr. McNamara was unable to claim a single victory. If he did have one to his credit, it would be that he stayed in his cabinet post. There was a time, in 1961 and early 1962, when the congressman, in private conversations, gave the Secretary no more than eighteen months in office. The McNamara tenaciousness proved Mr. Hébert wrong, but the McNamara discomfort was evident as issue after issue came to a boil.

When McNamara announced cut-backs in the B-52 long-range bomber force and suggested the FB-111 as a substitute, Mr. Hébert challenged the decision and called special hearings on its impact on the Strategic Air Command. Sessions were held early in 1966 with Secretary McNamara as the lead-off witness. After the Secretary presented his argument in the customary confident fashion and sat back to spar with the Hébert subcommittee in a question period, the Chairman dismissed him. He was not recalled to the stand, never cross-examined.

Other experts were heard from the Defense Department. Both active and retired USAF generals were questioned. The subcommittee report was highly critical of the McNamara policy and reasoning. At the same time, it approved of the FB-111 decision. But it sought more funding for AMSA, now the B-1,

and said Congress should be consulted before major weapon systems are eliminated.

On another issue, the Hébert victory was more clear. Secretary McNamara attempted to merge the Reserve forces with the National Guard. Mr. Hébert announced there would be no merger. The conflict raged for many months, but it was an Hébert bill, called the Reserve Bill of Rights Act, that finally passed Congress and guaranteed the integrity of the organizations.

Still again, Mr. McNamara announced he was abolishing the Junior ROTC programs in high schools and asked Congress to cut back on the senior ROTC effort in colleges. The reaction was another Hébert Bill in 1964, called the ROTC Revitalization Act. Instead of wiping out 234 Junior ROTC units, the Hébert Bill gave statutory cognizance to the program and increased the number of units to 1,200, including the Navy, Marines, and Air Force, in addition to the Army.

As Chairman of the Armed Services Committee. Mr. Hébert is expected to be more flexible than his predecessor. As a former newspaperman, he is conscious of the communications requirement, and probably less arbitrary than many other chairmen.

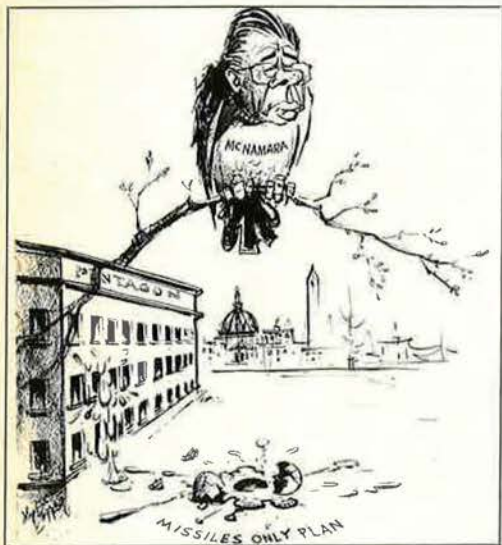
He has achieved the chairmanship through the seniority system—Mr. Hébert is Democrat No. 7 in the House—and staunchly defends this method of picking leadership. He has been in training for this job since the eve of World War II.

"I'm a hawk," he says, "but no dove ever wanted peace more than I do." ■



Friend Al Hirt puts forth on no uncertain trumpet. Mr. Hébert is sharing the treat with fellow Louisianian, Senator Russell B. Long.

"BOMBS AWAY"



—Charles Werner in the Indianapolis Star

The 1966 bomber probe broke this egg.



The Air War in Southeast Asia

BAC GIANG BY FLAK LIGHT

By Lt. Col. Ralph G. deClairmont, USAF

In the summer of 1966, a squadron of new RF-4C reconnaissance aircraft was sent to Thailand to begin night recce operations. On these single-plane missions, the crews seldom saw their targets until they looked at processed film back at home base. Here is the story of an RF-4C mission in "the barrel," the area around Hanoi. On this one, the author and his pilot/systems operator got a better look than they wanted . . .

IT WAS A typically clear, warm December night at Udorn Air Base in Thailand. The year was 1966. I stood on a dusty street corner, watching a vintage American western being shown at an outdoor movie theater, and waited for a bus to take us to fly in the war. What an odd way to live. But then, what an odd war!

John McHale, my pilot/systems operator, came down the path from the crew quarters as the bus bounced around the corner, leaving a wake of red Thai dust that covered everything on the base. Well, I thought, it's better than the rain and the flooding we had when the Klong came over its banks last monsoon season.

During the ride to squadron operations, I asked John the question that's always foremost in every aircrew's mind. "What'll this mission be—number fifty-nine?"

"Yep," John replied, "only forty-two to go, and then back to the big PX."

"I hope the weather's good in the barrel tonight. I've got a feeling we have Bac Ninh or the rail yards east of Hanoi as our target."

The first thing all crews do is check the scheduling board in squadron ops to see which missions have "go's."

"Hey, all night sorties have gone so far and we've got 827—a good bird with a No. 1 radar set. John, I've got a feeling this is going to be a good night. Let's see what target we drew."

On the way to Intelligence, there is one crew in the flight planning room drawing their maps. "Where're you going?" we ask.

"Photo carts [photoflash car-

tridge] mission on Route 6, and the weather doesn't look too bad. You got a barrel, eh? Have fun," was their cheery reply.

UB 429 is our mission number. Where is that folder? Here she is. Man, it's thick . . . must be a good one (the thicker the mission folder, the more the maps, the worse the place you are going).

"Let's spread it out and see what we have. It's the Bac Giang bridge. No, the target isn't the bridge but east of it. Double-check those coordinates with the Intelligence troops, John. Can't afford a mistake on this one."

Not too bad a mission. They only want infrared coverage, no photo carts required.

The infrared (IR) reconnaissance system in the RF-4C produces continuous strip photography of the area over which the aircraft flies. Unlike optical cameras, which need a source of light—photoflash cartridges at night—the IR system consists of a receiver that forms a picture solely from the heat radiated by the objects below it. When held at arm's length, the IR image is very similar to normal optical camera photography.

"This one should be a piece of cake, John. Timing isn't critical. Just get me lined up on your scope and we'll have it made. They probably want to find out if the bad guys are using a pontoon bridge at night to move supplies. Check the weather with Stormy before we figure out how to get into the valley."

"Weatherman, says 2,500-foot cloud base—tops 4,500 feet. Looks OK. Let's see what's the best way to get this target."

The recce crews, unlike the fighter





crews, were given the prerogative of selecting their own routes to and from their targets. Most recce missions were flown by single ships, and each crew had its own ideas about how targets should be approached. It's a safe bet to say that given the same target, no two recce crews would plan and fly their missions the same way. The many different tactics and techniques used by the recce crews made it impossible for the North Vietnamese air defense people to discover any pattern used by the recce forces—a distinct plus for the crews' survivability when they flew single, unarmed aircraft deep into enemy territory.

The target area assigned on this mission was near Bac Giang, about twenty miles northeast of Hanoi and eight miles southwest of Kep airfield, where many enemy interceptor aircraft were then based. The surrounding terrain consisted of flat lowlands and rice fields, with many irrigation canals and dikes. At night there were very few lights to assist in visual navigation, and many fields were flooded by the recent rains. Because of the flooding, the target area would be difficult to recognize, even in the daytime. At night, it would be virtually impossible to distinguish the exact area with the aircraft's radar set.

The Northeast Railroad and Route 1A both cross the Song Thuong River just west of the city of Bac Giang. Each communication link was a major supply route from Lang Son, near the Chinese border, to the industrial area around Hanoi. The bridges on these routes had long been surveyed as possible targets, and the task assigned to the recce forces was to verify whether alternate routes were being used to move supplies under the cover of darkness or during bad weather.

The entire area between Hanoi and Kep was defended by overlapping surface-to-air missiles (SAMs), and by thousands of anti-aircraft guns, ranging from hand-held machine guns to large-caliber, radar-directed weapons. Experts have said that the area around Hanoi was the most heavily defended in the history of air warfare.

This, then, was the challenge—

how to get to the target and back home. Not easy, but not impossible.

"John, looks to me like we ought to hit this one from the south, using the ridge line for a good radar lineup. It's the only radar return around there. What do you think?"

"Looks good, D. It's a good approach, keeps us out of the center of the defenses around Hanoi, and I can use the island in the Red River for a pre-IP [Initial Point] radar lineup point."

"How about 500 feet across the valley to keep the SAMs from getting us?"

"OK, D, that's fine. I'll plan for max speed in case we really get smoking along."

"I think we ought to plan to exit at the sea, staying low north of Haiphong ridge. Figure time to the sea and I'll stay on terrain-following radar at low altitude to dodge the triple A. Any MIGs that might be up we can scrape off on the hills."

"Sounds good, D. I'll plan an alternate route home through the mountains to the west in case things get too hot over Kep. No sense flying through a bunch of stuff if we can avoid it. How about using my old route from 8,895 to 5,128 [elevations of mountains] to get to the valley? We can stair-step a letdown from 5,128 to the island, staying about 1,000 feet above the terrain."

"Yep, I'll buy that. You draw the

map from 5,128 on and I'll make a log with the times, fuel, and minimum altitudes so we don't bash any hills. It looks like we can keep the external fuel tanks all the way. I'll check the fuel figures. If it looks close, we'll drop our centerline tank. We can always stop at Da Nang for gas if things don't go as planned. Let's get to work."

The tedious part was over once the mission was planned. The major decisions had been made and the route was in concrete. An intelligence briefing followed the flight planning. Code words, the defenses, active and suspected SAM sites, and the very important Rescue Posture and Procedures were covered in detail.

"Crown will be orbiting. . . . Check in on HF after takeoff. . . . Get a call out if you're hit. . . . Head for the sea."

The briefing confirmed that we would be the only good guys in the valley that night. The weather probably was too low for the fighters to work. All that remained was the wait for the code word from headquarters, saying whether we had a "cancel" or a "go." The phone rang, and shortly the PA system announced: "Cadillac, you have a go."

We arrived at the aircraft twenty minutes before takeoff, both heavy with the survival gear that all crews carried, including an extra radio in the G-suit pocket. The radio was our only real link to rescue if shot down. Only wish we could have carried more of them. Some crews carried so much equipment that I am sure they'd have sunk like a rock if they went into the water, or broken a leg if they landed on hard ground.

The bird had flown already that day with no writeups. Good—hope everything stays together for one more flight. Start-up and taxi to the end of the runway are normal. No other traffic moving on the base. Recce usually owns the sky above Udorn at night. We both check out the radar; it looks good. Let's go! Right on time. Don't want to waste fuel. Take the runway, runup, roll, light the afterburners, and away we go on number fifty-nine.

Turning out of traffic, we hit the stop watches, check the TACAN distance reading, hold exact ground speed, and fly a precomputed heading to a certain bend in the Mekong

River. If we arrive directly over this bend at the right time, then our inertial-navigation system and radar are both working OK. This is a must for night missions. Good old 827, everything seems to be in No. 1 order. There is our go-no-go point on the river, right on time. Cross the Mekong, head for 8,895; check position lights off.

In a few minutes, here comes 8,895 down the center of the radar-scope. I can even recognize this checkpoint on my scope. By starlight, as you get closer, you can see the dark mountain outlined against the solid layer of clouds across the border in North Vietnam. Next checkpoint is 5,128. Drop down to 1,000 feet above the rugged terrain and enter the smooth cloud layer. Boy, does it ever get dark in the clouds; but then nobody else can see you except possibly the bad guys on their radarscopes. Anyway, they'll have a hard time seeing us this low in the mountains.

"John, we got a minute and a half to go; you got 5,128 on the scope at twelve miles?"

"On the money, D, I got it. Don't forget to hack the clock at eight miles out. I'll tell you when."

Turning at 5,128, we start down and head for the island in the Red River. Recheck lights off, tighten safety belts, lock shoulder harness, adjust windshield defog, check fuel feeding. In a short time things will get busy in the cockpit. Don't want to run out of fuel over the valley. Recheck the infrared system on and working; no fail lights.

We level out at 3,500 feet to cross a ridge line, and just then a brilliant flash lights up the cockpit like day. Then a second flash!

"John, shut the carts off. What the hell, we don't have carts!"

Another flash, followed by another, mostly to the left and behind the bird. Fifty-seven mm! Someone saw us! Press on and get out of range of this guy. No more flashes. Weren't supposed to be any guns here. Check the bird; instruments OK, fuel looks good.

"Our magic box didn't warn us of that guy." Suspicions confirmed: Sometimes things don't work as advertised. Well, everybody knows we're coming now.

There's the island. Got to get down in the weeds. Feel a lot safer there; the big stuff can't bang away

Since graduating from flying school in 1952, Lt. Col. Ralph G. deClairmont has been associated with fighter-type aircraft. He has been in reconnaissance for the past ten years, with 100 recce missions over North Vietnam to his credit. Colonel deClairmont has more than 1,300 hours in RF-4Cs and now is assigned to Hq. Tactical Air Command, at Langley AFB, Va.

at you down low, and the guys shooting the small stuff can't see you at night. Turn, hack the watch, push up the power.

Five hundred feet feels comfortable now. The valley is flat as a pancake except for the hill we're using to lead us to our target.

Not many lights; we see the dim glow from Hanoi over to the left. I wonder if the guys in the Hilton are asleep, poor bastards.

"Got anything on the scope yet, John? We're three minutes out."

"Nothing yet."

"There's some flak to the left. They must think we're going for the railroad yard. Everything quiet ahead of us."

The flak looks like orange-yellow water coming out of a hose. They must use tracers on each round. You get the feeling you can see every round, but you know better. I like the night missions because you can see what you're up against. At least you can take evasive action to avoid some of the streams of yellow steel that are sent up to nail you.

"You got the IP, John? I think I see it on my scope; we're lined up. Hell no, we're ten degrees off course! Let's check turn to the right. That's better now."

"They're shooting at Bac Ninh."

"We gotta pull up to miss that hill. Don't look outside, John—keep on the scope! They got us now, flak below and above us!"

"D, this place ain't safe."

Got to get down lower to get the target. Pick a clear spot. There's the factory to the left—lights are still on. We must be on course.

"How much longer till we're over the target, John?"

"Hell, my groundspeed is off—we're doing almost max. Wait ten seconds more, then turn, D. We're probably in the traffic pattern at Kep. OK, turn to 090 degrees and let's get the hell out of here."

"Hang on, John. I'm gonna bend this bird around and get down. Those guys are still blasting away at us."

"How's the gas, D?"

"No sweat, we got about 9,000 pounds. I'll slow down and check it in a minute. Don't think they hit us; gas is good and the gauges are OK. In ten minutes we'll be at the sea and home free."

"Damn! Hope we got that target!"

"We looked good at the IP. I

saw the factory just to our left; we couldn't have been far off. I'm going to push down and go lower to get rid of anybody that's on our tail. We'll scrape him off on these hills!"

"Times getting close, D. Give me the radar and I'll check our position. Yep, there's the water ahead. Turn to 180 degrees in thirty seconds and climb."

"Let's check in with the Navy, John. Don't want them to get itchy trigger fingers. They almost knocked Wakeman down last month when he didn't check in."

"We better go to 35,000 feet to save gas, D. I don't want to have to land at Da Nang to refuel. I hope the Intell troops at debriefing still got some J.D. left. We earned it on this one."

The flight back to Udorn is slow and boring. Got to get on the ground and get the film developed.

"We have enough gas to go south of the DMZ and stay away from the SAMs, then direct back to Udorn. John, you take the bird back—I've done my work for tonight! You shoot the approach. I'll take over at minimums and land it."

Not much action in Laos tonight. A flareship near Tchepone has dropped a string of flares, but no fighters are to be seen or heard. The radios are quiet. Most guys are asleep at this hour, if they're smart.

Checking in with our radar site, we give the code words and are passed off to Udorn GCA for an approach to the base. There's one of our guys taking off. Must be on the early-morning weather recce. That'll be our mission in a few days.

Nothing at all moving on the base. We taxi in and shut down on the crew chief's signal. John tells the film downloaders to be careful with our IR film. I tell the crew chief to check the bird over carefully. We might have picked up a few holes.

Looking at the plane sitting on the ramp, she seems unscathed. I don't see how they could have kept from punching a couple of holes in us. I guess at max speed, we were going faster than they were used to. The bad guys probably shot mostly behind us. Yes sir, I'm always glad this bird can really move out, go fast and low.

The "bread wagon" takes us back to operations for debriefing with Intelligence, and a shot of good old J.D. We both go next door to the

photo-processing cell to wait for the film to come out of the machine. Boy, they seem slow, but it's only been thirty minutes from shutdown.

Here comes the film. Get it on the light table. It's good quality: There's the island, our check turn, the IP, the factory, the river bend, and our target area. Nothing there. That must be it, just before the river bends to the west. They don't have a pontoon bridge, and there's no traffic on the roads leading to the river.

"John, we aced this one. If we hadn't made that check turn though, we'd have missed it to the right. Let's go back to ops and brief the early-morning crews on the weather in the valley, and tell them how the war's being fought up north."

Back at ops, we check the schedule and, yep, we got another night barrel. "John, if we get a target in the same general area, let's use the same route, but we gotta change how we go from 5,128 to the valley."

"You said it! I'll let you take terrain-following from the mountain till we're two minutes from the island. That'll get us past that gun site."

"Those bursts were too close! I could read the instruments like it was daylight when they went off. But I'd rather take on those guns than the ones over Hanoi! I hope tomorrow night it's not the railroad yard east of town. There's only one way to get that target, and it ain't conducive to longevity."

Our luck was still holding. There was one vehicle—the Chevy pickup—that we could use to get back to the other side of the base.

"I'm ready for a little chow, John. I could really go for some breakfast right now. You drive. You gotta stay proficient in the pickup."

And so it went with the recce troops. Each mission north meant one less to reach the magic 100 over NVN, and home. A lesson was learned on every encounter with the enemy . . . if you made it home. We learned a few on this mission.

But the big lesson, learned and relearned, over and over again, was this: With good planning, teamwork, and cool heads when things didn't always happen as you thought they would, a single recce crew could take on the entire defense system of NVN, get their target, and return to fly again another time. ■



“ . . . In our time, it is clear that ‘unquestioning’ obedience is a completely unacceptable, if not inappropriate, conception. Sophisticated, creative, dynamic men, whether in uniform or not, cannot be properly characterized as ‘unquestioning’ . . . ”

The American Theirs t

IN HIS often-quoted poem, “The Charge of the Light Brigade,” Alfred Lord Tennyson characterized an attitude toward military men that smolders perennially but glows brightly during periods of national frustration.

Theirs not to make reply,
Theirs not to reason why,
Theirs but to do and die.

We are concerned, all of us, about a picture of a profession that leaves us feeling that a man must give up his rationality, his very creativeness, the source of his dignity as a man, in order to play his role as a soldier. Tennyson’s dramatic portrayal conjoins the soldier’s unquestioning obedience with the qualities of courage, loyalty, and determination but leaves us with the inference that not all military leaders are as bright as they should be, even in things military: “Someone had blundered.”

History records many blunders, costly in human lives, made by military leaders who were just not quite equal to a battle or a war or a world that did not follow yesterday’s pattern. General Sir John Winthrop Hackett in his 1962 Lees Knowles Lectures, published as *The Profession of Arms*, cites the devastating British defeat at the Battle of Loos in World War I as a prime example of faulty, unimaginative, and inflexible military leadership. The British advanced twelve battalions against entrenched German machine gunners and lost 8,000 of 10,000 men, while the German losses were “nil.” Of this tragedy, Sir John said:

. . . these generals were not all wicked men nor always stupid men and they were very

rarely cowards themselves. Their errors were more those of blindness than malignity. Where they failed was in understanding the techniques of their time. . . . Whatever their many good qualities, they were often unequal to their task, and when they made mistakes the results were often appalling, with the most serious consequences for western society.

History further discloses certain practices in the military organizations of various countries which deemphasized positive military achievements and perpetuated negative attitudes toward the profession. Promotion by purchase, class discrimination between soldier and officer, and bestowing commissions upon the aristocracy all did little to relate intellect and leadership ability to military advancement. These practices, along with such errors as that committed by the British generals at the Battle of Loos, may have prompted H. G. Wells’s comment in his *Outline of History* (1920):

The professional military mind is by necessity an inferior and unimaginative mind; no man of high intellectual quality would willingly imprison his gift in such a calling.

Popular literary lampoonings of military leaders (see how high-ranking officers are characterized in *Seven Days in May*, *From Here to Eternity*, *Fail Safe*, *Dr. Strangelove*) or dire warnings against the military-industrial complex (Fred Cook’s *The Warfare State*, Tristram Coffin’s *The Passion of the Hawks*, John Kenneth Galbraith’s *How to Control the Military*) help us to understand current attitudes toward “military minds.” If we add an extremely un-

The views expressed herein are those of the author, and do not necessarily report official policy or reflect the views of the United States Air Force or the Department of Defense.

By Col. Malham M. Wakin, USAF

Military— Reason Why

popular war in Vietnam which, though not initiated by our military leaders, must be waged by them, the *Pueblo* incident, the My Lai incident, and service-club financial scandals, one might well ask, "Why *should* a man of intellectual ability and moral integrity 'willingly imprison his gift in such a calling'?"

Quality, Attributes, and Attitudes

In our current American society, where military-related issues have surfaced simultaneously with a general questioning of all authority and a relatively automatic reaction by our youth to any representatives of the "Establishment," the very nature and practice of the military hierarchical structure is being seriously questioned. It would seem to follow reasonably that if the intellect and general competence of an officer are questionable, then so might be the orders he issues and the policies he promulgates.

Samuel Huntington, in his excellent study, *The Soldier and the State*, examines the so-called "military mind" in terms of (1) its ability or quality, (2) its attributes or characteristics, and (3) its attitudes or substance (values and views). Today, how are military men likely to be judged against Huntington's criteria?

We can find a variety of views on their intellectual ability. The general conception is almost a stereotype from movies, television series, and popular novels. Everybody knows that military men don't think—they obey orders. ("Theirs not to reason why.") And of course there is a clear inverse ratio between rank and intellectual perceptiveness—the higher the rank, the lower the intellectual quality. The general conception is not very complimentary. A remarkably different view from a different era may be found in von Clausewitz, who held that the best of military leaders are not merely

intelligent—in the sphere of areas relevant to war they are *geniuses*. But this view is in contrast to the attitude of the Prussian General Staff after 1860, which was that "genius is superfluous, even dangerous." They held that "reliance must be placed on average men succeeding by superior education, organization, and experience."

With respect to its attributes or characteristics, Huntington suggests general agreement that the military mind is thought to be "disciplined, rigid, logical, scientific; it is not flexible, tolerant, intuitive, emotional." I will return to these characteristics—especially discipline—later.

There are a number of general conceptions about the attitudes or substance of the military mind. It is thought to be antidemocratic, warlike and authoritarian, favoring aggression in foreign policy, believing that conflict and war develop man's highest moral and intellectual qualities, and believing that war is inevitable. In Fred Cook's attack on the military-industrial complex (*The Warfare State*), we are told that military men belong to the Radical Right, that they want war, even at the risk of total annihilation, and that they have joined forces with big industry in a combine driven by mutual self-interest and often in direct opposition to the nation's welfare and the ideal of international peace.

The least attractive picture of a power-mad military elite is easier to believe if one receives the kind of letter I did prior to the 1964 presidential election. It was signed by a retired Army brigadier general and declared that the "total elections of 1964" were "null and void." The author advocated that we "throw the rascals out" in vigilante fashion, and the writer declared himself ready "to lead the drive for the full restoration of Constitutional Government." He signed himself as Administrator of the Constitutional Provisional Government of the United States.

Was this a ridiculous hoax? Was the author of this letter mentally unbalanced? Incredible as it may seem, some Americans believe that such a letter represents accurately the current qualities and attitudes of the military mind.

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Some even believe that "it could happen here" (see the last installment of *Khrushchev's memoirs*).

Discipline, Creativity, Moral Character

The aspect of military life at once both indispensable and the cause of much confusion about the "military mind" is *discipline*. There is abroad the illogical but not totally unwarranted view that the man accustomed to taking orders cannot be a creative thinker. The time-honored dictum that to give orders a man must first demonstrate that he is capable of following them is still observed in our military structure. And it ought to be. But is it not possible that by the time a man gets to be a general, he is so used to following orders that he no longer possesses the imagination and dynamism required of one who gives the orders? Or as Galbraith now says in *How to Control the Military*, members of the military become so immersed in the bureaucracy that they are capable only of bureaucratic truth, which is parochial and always favors their own service and its defense-industry suppliers.

Murray Kempton, in reviewing Eisenhower's *Mandate for Change* in *The New Republic* (November 30, 1963), suggests that military discipline has a peculiar warping influence on moral character.

He says:

. . . the good soldier will lie under orders as bravely as he will die under them.

The garrison mind can produce acts that are honorable and even gallant; but notions of high virtue and selfless service seldom intrude upon it, being disposed of by discipline.

This thought—that discipline not only destroys creative thinking; it "disposes of" moral virtue—is even more disturbing than our previous one. Think of the impassioned pleas during the Nazi war-crime trials: "I am not responsible!" "I was obeying orders!" "I acted as a soldier!" Certainly discipline can be a convenient scapegoat for abdicating moral responsibility. "Passing the buck" is a very ancient military game. It is also a very ancient human game.

We seem to have arrived at a rather unhappy dilemma. Everyone grants that discipline is essential to any military organization; yet some claim that discipline is incompatible with dynamic thinking. Others see it as an excuse for immoral behavior. By these measures, the man who devotes a lifetime to military service would seem to be both intellectually and morally insensitive. It is taken for granted that this same man is nevertheless very brave, very loyal, and so dedicated to the ideals of freedom and personal dignity that he is willing to risk his life in preserving these values for his countrymen. The stereotype begins to suggest a personality



that can be easily duped, manipulated, and with little difficulty maneuvered into following some power-hungry leader in a military coup. We can add other characteristics to this "military mind," which further strengthen the possibility. Some say that the military mind is often conservative in the sense of fearing change, any change. It operates out of fear for the future (retirement pay, security, etc.) and hence will never rock the boat.

Are there really people like this in the military service? Yes. There are security-conscious, anti-intellectual, morally insensitive military men. There are also security-conscious, anti-intellectual, morally insensitive lawyers and doctors and politicians and plumbers. There are college professors who cling to old lectures, any old lectures; there are television repairmen who replace old tubes with other old tubes. But the crucial difference, the point we cannot afford to ignore, is that an irresponsible doctor or teacher may damage only a few lives, whereas an irresponsible military leader could conceivably destroy our whole way of life, if not human life itself.

If this stereotype of the military mind, which we have borrowed from various sources including our current literature, is a true picture of our military leaders, then we are truly in danger. And the scare-spreaders are quite right—it *could* happen here. There are *some* military officers who exhibit *some* of the characteristics of this stereotype. They are easy to single out precisely because they are different; they are *not* representative of the officer corps. There are, in fact, many great leaders in the military who are dynamic thinkers and doers and who have not had their moral standards "disposed of" by discipline.

Discipline, Responsibility, and Freedom

Let us examine discipline more closely. Just a little reflection should reveal that it is simply not true that discipline must destroy individual dynamism. Indeed, truly dynamic thinkers and

"Older officers are justifiably concerned that the reliable values might be set aside; the younger are justifiably concerned that their new ideas might not obtain a fair hearing."



leaders have and need great self-discipline. Plato, concerning himself with the proper training of those powerful intellects that should rule in the ideal "Republic," stressed the importance of the rigors of military discipline in preparing the philosopher-statesman for the intellectual tasks of a prospective ruler. It is important to note here that *appropriate* training in the external form of discipline, which is the military's stock in trade, is expected to assist in the development of individual self-discipline.

The central question has always been how to develop discipline without crushing creativity. What kind of character training can be blended with military training without destroying individual responsibility? Individual responsibility is universally assumed to be conjoined with individual freedom, which seems to be the direct antithesis of military discipline. In a recent address, "The Meaning of Freedom," William Pearson Tolley, President of Syracuse University, commented on the relationship between freedom and discipline on both the individual and social levels. On the individual level, he stated:

... it is the disciplined mind that is most truly free. We have always understood the power of a disciplined mind. What is not so clearly seen is the freedom that comes with this power. Man's triumphant journey to the moon is only the latest case in point. One can pay tribute to the level of American science and technology and particularly to the computers that multiply man's mathematical powers. What is more significant, however, is the self-discipline, dedication, and skill of the large company of men responsible for this magnificent achievement. The astronauts themselves are the visible heroes, but there are countless others like them. All are in the sharpest contrast to so many in our affluent society who appear alienated, aimless, undisciplined, and driven by impulse and emotion. . . .

Looking at this dichotomy, one is struck not only by the contrast in life styles and

values but in the sense of identity, and again in character and power. For our purposes, however, the significant contrast is in the exercise of freedom. The unskilled is not free. The uninstructed is not free. The inexperienced is not free. The undisciplined is not free. Whether the field is carpentry, athletics, or space technology, only the skilled, the instructed, the experienced, and the disciplined have both power and freedom.

On the social level, Tolley maintains further that "In a free society we seek order and justice as well as freedom, and these goals inevitably put a brake on personal freedom."

Tolley's views support the general proposition that the achievement of worthwhile goals is enhanced, not hindered, by discipline. The external disciplinary structure imposed by the military should not be motivated by the goal of limiting personal freedom but rather by the need to coordinate, order, and organize the efforts of large groups of men as they tackle the diverse tasks coincident to the defense of our way of life. The "brake" that military discipline applies to personal freedom is apparent, but it is at least analogous to the brake each individual applies to his appetites and emotions in order to accomplish any worthwhile task. Both forms of discipline are justifiable in terms of the order required to accomplish our goals. In this sense Tolley seems to have hit it just right; with respect to goal accomplishment, "the undisciplined is not free."

But, one must still ask, what of personal responsibility and intellectual creativity in the restrictive context of the military structure? How shall we strike an appropriate balance? The answer lies in our willingness to nurture creative abilities and to encourage critical analysis within the system.

Striking a Balance

It is easy to encourage intellectual curiosity, analysis, and creativity in classrooms. It is not

so easy, but even more important, to retain that questioning approach and scholarly attitude toward military training. If better ways of training can be found, then they should be adopted. If some practices can be shown to be purposeless, then better practices should replace them. But innovators must be prepared to accept responsibility when their innovations fail, as well as credit when they succeed. The crucial point, the crux of the balance we seek, is reached precisely when the time for research and questioning reaches its limit and a decision must be made.

In John Locke's phrase, citizens of a free society have consented to "be concluded by the majority" when decisions are reached. Socrates argued that when a man fails to persuade his government to change its policies, then he must either abide by them or leave the state. The military as an institution cannot escape an analogous position if it is to function well or even function at all. In a world where the men who wear uniforms are highly educated and where creativity is indeed nourished, there is room for discussion and contributions from those who are concerned enough and able enough. But when the contributions are all evaluated and the decisions are made, then military men are obliged to obey the orders of their superiors, just as ordinary citizens are obliged to abide by the laws of the state. In either case, other alternatives seem to lead inevitably to chaos.

The question of unlawful or immoral orders also is analogous to the question of illegitimate or unjust laws. Citizens are not obliged to obey laws that are clearly against the common good, or immoral in some other way. Similarly, soldiers are not obliged to obey orders that are clearly unlawful. Difficulties arise in those cases when either the legitimacy or the morality of the law or order is not clear, often because all of the relevant facts are not known.

In a democratic society the ordinary citizen, who is unable to ascertain all of the facts, is willing to reside his trust in his elected representatives who do have the facts, or he attempts to elect officials he can trust. Soldiers analo-

gously must place their trust in their military and civilian leaders. This kind of trust is not necessarily identical with the "unquestioning obedience" implied in the famous line quoted earlier, "Theirs not to reason why." Rather, in our time, it is clear that "unquestioning" obedience is a completely unacceptable, if not inappropriate, conception. Sophisticated, creative, dynamic men, whether in uniform or not, cannot be properly characterized as "unquestioning."

This is not the same as saying such men will not be obedient. Rather, if they are truly mature, responsible, and creative, they will have accepted the ultimate necessity of right order, and their willingness to obey is better characterized as *enlightened* obedience. When leaders do consult their men as a matter of course, when they do accept the ideas of others, when they do explain the reasons for various policies, then, in crisis situations, subordinates will indeed be justified in accepting orders immediately. Their trust, in this sense, is enlightened and justified.

It is not likely that those young officers who have both the noble aspirations and the requisite abilities to "do things better" will always get their ideas adopted. We noted that in the analogous case, the free citizen strives to elect other officials. For the young officer a more direct method is available, but it requires the patience to make small gains at each level in the hierarchy until he reaches a high enough position in the rank structure to achieve broad applications of his ideas. The new generation of officers can bring about changes in the old—and today the old are listening. To paraphrase William James, we are in the position of marrying new facts and new ideas to old and reliable values. Older officers are justifiably concerned that the reliable values might be set aside; the younger are justifiably concerned that their new ideas might not obtain a fair hearing.

Neither intellectual brilliance alone nor moral character and discipline alone will sustain us in our most desperate hours. We must not settle for less than an appropriate balance of the best of each. ■

CLOSING THE GENERATION GAP

"It used to be that young airmen were hesitant to ask questions of senior officers. Not anymore. They 'tell it like it is' and expect you to do the same. I don't mean that they are rude and undisciplined. But when they think something is wrong with the existing order, they tell you directly why they think so, and they expect you either to explain it or change it. I think that such questioning of the established is a fundamental right—so long as it is done legitimately. They did not make the world as it is and are under no compunction to defend an institution simply because it exists."

—GEN. BRUCE K. HOLLOWAY (to the Michigan Association of Chiefs of Police)

(AIR FORCE Magazine will pay \$10 for each anecdote published.)

MIA/POW Action Report

By Maurice L. Lien

SPECIAL EDITOR FOR MIA/POW AFFAIRS

Week of Concern

Congressmen John B. Anderson (R-Ill.), John T. Myers (R-Ind.), and Roger H. Zion (R-Ind.), along with a bipartisan House group of more than 140 cosponsors, introduced legislation on the opening day of the Ninety-second Congress to designate the week of March 21-27 as "National Week of Concern for Prisoners of War/Missing in Action."

An identical resolution was introduced in the Senate by Sen. William E. Brock, III (R-Tenn.), with a bipartisan group of some thirty other Senators as cosponsors. The resolution is the first legislation submitted by freshman Senator Brock.

"We chose the week of March 21-27 for an historically significant reason," the legislators said. "It was on March 26, 1964, that an American Army adviser—Capt. Floyd J. Thompson—was captured in South Vietnam, becoming the first American POW of the Vietnam War."

The congressmen went on to say that the Week of Concern "will help to bring the POW problem front-stage in the arena of world opinion." In their words: "We are hopeful that during this week the pressures of world opinion will be brought to bear on Hanoi for compliance with the Geneva Convention. . . ."

Moment of Silence

Receiving enthusiastic support from the National League of Families is a proposal by Jere Sellars, a Chattanooga, Tenn., newsman, that all of America stop for one minute on Good Friday, April 9, and "with one voice," say to the Communists, "Let my people go."

Plans for a moment of silence in Tennessee were announced in early February by Mrs. Wayne E. Fullman, State Coordinator for the League of Families, whose Air Force husband is missing in action. The Good Friday observance is set for 2:15 p.m., Central Standard Time.

Earlier, organizers of the period of silence brought together delegates from civic, church, farm, and veterans groups representing more than 2,500,

000 Tennesseans, and received pledges of active support from every organization. The group has also been assured the support of elected officials and police.

In outlining hoped-for action, Mr. Sellars said, "Everything stops for one minute, while 4,000,000 Tennesseans stand together at one time and with one voice say [to the Communists], 'Let my people go.' They may think it, pray it, say it, sing it, or shout it, because we believe the world will hear it—including our men held prisoners in Southeast Asia."

In their newsletter detailing the program, the League urged its members: "Please make every effort to see that it is carried out. If we can be sure a large portion of the United States will participate in this campaign, we will be able to appeal to foreign countries for their aid. As Mr. Sellars asks, 'Who can't spare one minute?'"

Whirlwind Tour

In a unique 300-mile, one-day speaking tour that included engage-

ments in four Ohio communities, Air Force Col. Norris M. Overly—one of nine Americans released to date by North Vietnam—and Congressman Clarence E. Miller (R-Ohio) brought the story of missing and captured servicemen directly to the citizens of the Ohio Valley.

Colonel Overly and Representative Miller were accompanied by Mrs. Robert Smith of Athens, Ohio, whose Marine Corps husband has been missing in action for more than eighteen months. At every stop the trio's remarks were heard by attentive audiences made up of college and high school students, parents, and townspeople. The whirlwind tour, made on January 14, was arranged and coordinated by Congressman Miller's office.

Addressing near-capacity audiences in Zanesville, Marietta, and Lancaster—as well as in crowded Memorial Auditorium on the campus of Ohio University in Athens—Colonel Overly told of his ordeal as a POW following his downing by Communist ground fire over North Vietnam in September



Resting during a 300-mile speaking tour that covered four Ohio Valley communities in one day are, from the left, Mrs. Robert Smith, whose husband is missing in action; Rep. Clarence E. Miller, from Ohio's 10th District; and USAF Col. Norris M. Overly, one of the nine Americans released to date by North Vietnam.

MIA/POW Action Report

1967. (See AIR FORCE Magazine, Nov. '70, for a full account of Colonel Overly's experiences.)

The stop at Ohio University was particularly significant, in Congressman Miller's view, in that it brought an Air Force officer, a US Congressman, and a housewife together with college students in an atmosphere of mutual concern. Last spring, campus disorders protesting American involvement in Cambodia led to the abrupt closing of the school three weeks ahead of schedule. As on many campuses across the US, there have been campaigns at Ohio U. to drive out ROTC.

At the university, the trio spoke to an audience of nearly 2,800 students and faculty members. In contrast, Rennie Davis, one of the "Chicago Seven," drew only 400 to the same auditorium three days later to kick off an observance of the tenth anniversary of US involvement in the Indochina conflict.

"We are here to talk about helping these men home again," Congressman Miller told the crowd. He emphasized that government efforts to alleviate the plight of the POWs must be underscored by public concern and community action at the grass-roots level of the nation.

At each of the four stops, Colonel Overly stated, "You, the students and citizens, can and must do more to alter and influence the North Vietnamese way of thinking, because Hanoi has the distorted view that all Americans support their cause."

Mrs. Smith, active with the Ohio Chapter of the National League of Families, said, "I want to know *where*

NEW ADDRESS FOR LEAGUE

Headquarters for the National League of Families moved last month to new offices provided by the American Legion in their Washington, D. C., building. With a large increase in activity, the League outgrew quarters furnished them for an eight-month period by the Reserve Officers Association. Their new address is: National League of Families, 1608 K St., N.W., Washington, D.C. 20006.



Two wives of MIAs in Southeast Asia, Mrs. Clyde Campbell (left) and Mrs. Stanley Olmstead, received AFA Chapter awards for their efforts in the "Write Hanoi" drive. Sharing the moment, from left, Lou Kaposta, Shreveport Chapter President; Ralph Chaffee, Barksdale-Bossier President; and Toulmin Brown, Louisiana State President.

my husband is. I want to know *how* my husband is. I want to know *if* my husband is.

"For the sake of these missing or captured men, and for the sake of their families," she declared, "let us resolve to unite in a chorus of protest and appeal that will be overwhelming in volume and unmistakable in its intent."

Campaign Notes

The Colin P. Kelly Chapter of AFA, Rome, N.Y., played host to former POW Col. Norris M. Overly for a tightly scheduled two-day visit to central New York state that included appearances in Rome, Syracuse, and Utica. The Chapter President is Kenneth C. Thayer.

On each day, Colonel Overly met six speaking engagements and was interviewed an equal number of times by the news media.

On January 21, Colonel Overly reports, he made several appearances in the Philadelphia area, sponsored by the National League of Families. One stop was at the University of Pennsylvania. There, a faculty member challenged him to debate the Indochina conflict. Colonel Overly turned down the offer, but when he arose to speak, the same faculty member began passing out brochures calling Colonel Overly, among other things, a liar and a murderer. In a discussion period that followed, a handful of students, one waving a Viet Cong flag, tried to monopolize the time with questions about the morality of the war, in an effort to sidetrack the POW issue.

* * *

Brig. Gen. Dorr E. Newton, Jr., USAF (Ret.), immediate Past President of AFA's Alamo Chapter, reported that in a year-end, Jayce-sponsored drive in the San Antonio, Tex., area, more than 500,000 signa-

tures were obtained in behalf of MIA/POWs. Of this total, more than 50,000 were gathered by the Alamo Chapter. A replica of a bamboo cage—of the kind used by the Viet Cong in South Vietnam—was borrowed from the Abilene, Tex., AFA Chapter and displayed at shopping centers where AFA members and their families collected signatures. Alamo Chapter coordinator was Col. Oliver W. Little, USAF (Ret.).

* * *

Mrs. Herman L. Knapp, Colorado Springs, Colo., coordinator for the League of Families, wrote to AFA National President George D. Hardy in January that "through the financial and personal help from your Colorado Springs Chapter, we were able to send five people and 125,000 letters to Paris and Sweden." In her letter, Mrs. Knapp, whose Air Force husband is MIA, singled out AFA State President Richard E. Stanley and Chapter President Thomas W. Shoop for special praise. The drive was sponsored by a local organization called Colorado Springs for Prisoners of War.

* * *

AFA National Director S. Parks Deming informed us that the Mountain Bell Telephone Co. recently sent out 2,292,000 MIA/POW inserts with telephone bills to customers in eight states. Arrangements were made by C. K. Peterson of their public-relations department, with full support of R. K. Timothy, Mountain Bell president.

Another 3,200,000 inserts went out in January to New England Telephone Co. customers in five northeastern states. In a letter to Andrew W. Trushaw, immediate Past State President of the Massachusetts AFA, a telephone company executive wrote "... we trust this appeal will have some influence in improving the situation which our imprisoned servicemen are experiencing in Southeast Asia." ■



ADC, SAC, and TAC . . .

The Combat Commands

Mark 25 Years

FOR THE three "old original" combat commands of the United States Air Force, March 1971 marks their silver anniversary of service. It was in March 1946, the year *before* the Air Force itself became an independent service, that the Air (now Aerospace) Defense Command, the Strategic Air Command, and the Tactical Air Command were born. Carved out of the old Army Air Forces, all three started out pathetically small but strongly purposeful. Their histories are, to a large degree, the history of America's post-World War II deterrent stance.

ADC

Air Defense Command—which was later to change its name after Sputnik, to better describe its mission in a space-age world—came into being at Mitchel Field,

N.Y. Its mission, then and now, was to defend this country and continent against air attack. ADC's first commander, Lt. Gen. George E. Stratemeyer, had little to work with in the way of hardware in those days of ill-advised enthusiasm for rapid demobilization. He started off with a force of fewer than 150 fighters and some 25,000 people to build a defense against an incubating Soviet bomber threat. These small forces grew to an enormous air defense organization that encircled the North American continent. 1957, the year of the Soviet Sputnik, saw an ADC with some 1,500 aircraft on twenty-four-hour alert, plus an array of search radars, Distant Early Warning Line sites in the far north, a fleet of picket ships, Texas Towers, a collection of SAGE semiautomatic command and control centers, sev-

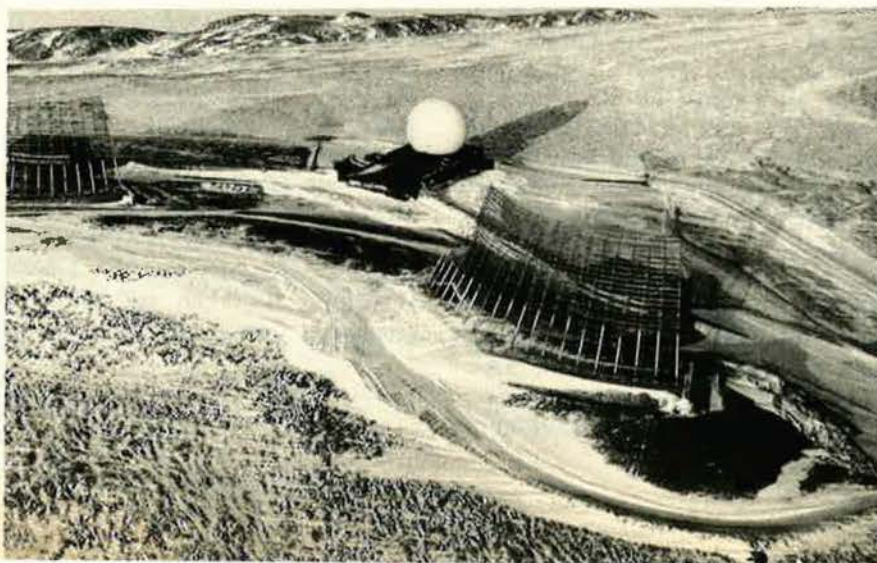


ADC's first commander was Lt. Gen. George E. Stratemeyer, one of the planners of the post-World War II continental air defense system designed to cope with the Soviet bomber threat.



The current commander of ADC is Lt. Gen. Thomas K. McGehee. ADC's mission is to defend the country against aerospace attack. It is the major component of the joint US-Canadian North American Air Defense Command (NORAD).

Just one of the choice assignments of Aerospace Defense Command people: Thule, Greenland, a Ballistic Missile Early Warning site. The temperature much of the year is -20. The winds roar at over 100 mph, and it's dark three months of the year.



eral squadrons of airborne early-warning-and-control aircraft, and a total of some 100,000 personnel. By mid-1960, ADC's aircraft inventory included F-102s, F-106s, and F-101s.

Today, headquartered at Ent AFB, Colo., with a mission that now includes continuous surveillance of all spaceborne vehicles, and coping with a much-enhanced Soviet bomber capability, ADC, to the dismay of air-defense experts within the command and outside it, is facing the aerospace threat to this



By picking up the famous red phone at SAC's Underground Command Post, the senior controller can be placed in instantaneous contact with every SAC command post at bases throughout the world.

continent with about half the people it had in 1957—some 54,000 now—and only about 250 interceptor aircraft in regular units, supplemented by some 300 Air National Guard interceptors. It is still relying on the F-102, F-101, and F-106. The command's budget, a victim of both inflation and downgrading of the air-defense problem by higher authority, is reduced. ADC today is trying to live on less with the clear advantage of its highly trained manpower and whatever benefits may be derived from such technological advances as the far-north Ballistic Missile Early

Warning System (BMEWS) and the Over-the-Horizon radar that can detect missile launches seconds after liftoff—much earlier than line-of-sight BMEWS—as well as the new Airborne Warning and Control System (AWACS) survivable airborne-radar-surveillance platform which, when it becomes operational in the late 1970s, will be able to detect incoming hostile bombers at any altitude and deploy interceptors to meet them. ADC wants, but has not yet gotten, an improved interceptor to replace its aging F-106. The F-15 and F-14B are being considered for this role. While some may discount the threat, in the view of ADC's current commander, Lt. Gen. Thomas K. McGehee, aerospace defense these days "is becoming more complex as potential enemies exploit the air and space realms."

SAC

When the Strategic Air Command was created in March 1946 out of the Army Air Forces' old Continental Air Forces, it had only three jet aircraft—P-80 "Shooting Stars" that had seen service during the last days of World War II. Of its 600 aircraft, under command of SAC's first chief, Gen. George C. Kenney, some 250 were bombers: B-17s, B-25s, and B-29s. General Kenney's people inventory numbered 36,800. First headquarters was at Andrews AFB, Md. SAC was more a mission than a force.

The mission was to develop a

deterrent nuclear strike force to keep the peace. SAC's early nuclear muscle was demonstrated the same year as its birth. In the summer of 1946, SAC participated in the atomic-bomb tests at Bikini. As the post-World War II years rolled by, SAC built up gradually at first, then rapidly, particularly under the command of its most famous chief, Gen. Curtis E. LeMay, into the most powerful offensive military force in the history of the world. Its inventory of aircraft changed, and in 1948 the newly introduced B-36 became its big gun. In-flight refueling extended aircraft range; overseas bases enhanced the command's worldwide capability. By 1949, the transition had begun to the first of the jet bombers, the B-47. A year later, the Korean War put SAC to work in combat, albeit with older B-50s. As the tense 1950s wore on, the command grew and evolved toward all-jet capability. The B-52 was phasing into service by 1955. By the next year, SAC, now a multibillion-dollar operation, announced plans for the phasing in of the revolutionary new missiles. The transition to the mixed force came under the leadership of Gen. Thomas S. Power. SAC headquarters, from small beginnings at Andrews AFB, had long since moved to Offutt AFB, Neb. SAC's might, clear to the Soviets in 1962, helped powerfully to back up President Kennedy's virtual ultimatum to the



Gen. George C. Kenney was the first commander of the Strategic Air Command. He and his command opened for business at Andrews AFB, Md., in 1946.



Current commander of SAC is Gen. Bruce K. Holloway. From SAC headquarters at Offutt AFB, Neb., he commands a vast array of mixed-force weaponry—manned aircraft and missiles.



Russians during the Cuban missile crisis. Not many years later, the command would play a major role in Vietnam, using its strategic B-52s with great success in tactical-bombing roles over jungles. Today, its B-52s, FB-111s, KC-135s, SR-71s, U-2s, plus its missile force of Titan IIs, Minuteman Is, IIs, and IIIs, its unequaled command and control facilities, and its approximately 166,000 people, under command of Gen. Bruce K. Holloway, represent a force that stands sturdily as a bar to general war.

TAC

The Tactical Air Command actually had two births. Two years after its initial creation in 1946 under command of Maj. Gen. E. R. Quesada, it was absorbed temporarily by the Continental Air Command. But that did not last. By late

1950, TAC was reestablished as a major command and its men were deeply involved in the Korean War, which had created a new recognition of the need for the kind of airpower that would be necessary for *limited*, rather than all-out, war in the nuclear age. New doctrines were developing. While major emphasis still was laid on strategic nuclear airpower, it was beginning to be understood that the nation needed more. The usefulness of jets for close support of ground forces was recognized, as well as the need for airlift and a high degree of tactical mobility in a world where the likelihood of "brushfire wars" was increasing as the superpowers backed away from direct nuclear confrontation. The idea of "packaging" forces and equipment, an idea that evolved into the TAC Composite Air Strike Force (CASF), took hold. By 1954, TAC received into the inventory the first of the Century-series supersonic jets, the F-100. Air refueling, a vital art, was beginning to make a crucial difference in terms of mobility. 1958 saw TAC CASFs deployed to Lebanon. 1961 saw TAC play a major role in the Berlin crisis when thousands of Air Guardsmen and Reservists were recalled. TAC helped in the reconnaissance over Cuba that showed the installation of the Soviet missiles and stood ready for war if it came. In the

Maj. Gen. E. R. Quesada was the first commander of the Tactical Air Command when it opened shop as one of the three "old original" combat commands back in 1946. He later served as Administrator of the Federal Aviation Administration.



Gen. William C. Momyer, a veteran of the war in Southeast Asia, is the current commander of TAC. He sees tactical airpower as a major instrument of diplomacy in today's complex world.



early 1960s, TAC's airlift sorties evacuated refugees from the war-torn Congo.

The command was in Vietnam practically from the beginning of US involvement, providing advisers and, in the United States, developing new techniques of airborne counterinsurgency operations at the then-USAF Special Air Warfare Center at Eglin AFB, Fla. After the Gulf of Tonkin incident in 1965, TAC arrived in Southeast Asia in major force, with fighter-bomber, forward air control, tactical airlift, Special Air Warfare (now Special Operations), and reconnaissance aircraft and crews. The command, headquartered at Langley AFB, Va., which had once been viewed as a stepchild to strategic airpower, is now bigger and more important than many would have thought possible or necessary a few years ago. In the words of the current TAC commander, Vietnam-seasoned Gen. William C. Momyer, "Tactical airpower is a decisive element in today's diplomacy."



Tactical Air Command's F-4C fighter, which has piled up a memorable combat record in Vietnam, made its initial appearance in the USAFE area in the mid-1960s during the North Atlantic Treaty Organization's Exercise Winter Trail held in Norway.

Airman's Bookshelf

Systems Analysis

How Much Is Enough? Shaping the Defense Program, 1961-1969, by Alain C. Enthoven and K. Wayne Smith. Harper and Row, New York, 1971. 337 pages plus notes and index. \$8.95.

Here is a book that most readers should approach with caution—and for several reasons. First, it presents a picture of the Department of Defense Systems Analysis organization in the 1960s as seen through the eyes of its director and his assistant. Such a view is necessarily subjective and vested. Second, it describes a variety of examples and decisions that appear deceptively straightforward and objective. But the countervailing arguments often do not appear or are mentioned only in passing. And lastly, the book contains errors in fact, apparent contradictions, and a number of unsupported assertions. Even the cautious reader is apt to be misled if he is not aware of the whole story.

Yet, approached with caution, this book tells a very interesting story, albeit a different story from the one the authors may have intended. By drawing back the curtain on their Systems Analysis organization, they have indeed shown the very useful, but also limited, utility of the systems-analysis concept. At the same time, they have revealed their own susceptibility to internal institutional pressures.

What makes this particularly interesting is that throughout the book they fault—almost to the point of obsession—the military services for being constrained by institutional pressures; yet they never seem to recognize the identical fault in themselves. From this perspective, the reader should not be at all dismayed if he cannot find any of the Systems Analysis mistakes the authors promise to discuss. (I could find only one; they admit to having underestimated the cost of the C-5A.)

Nor should the reader be surprised to find the role of Systems Analysis grow from a small independent voice, to a forum for debate, to a developer of cases against programs, to the Secretary's inquisitor. In fact, the careful reader will find Systems Analysis moving inexorably to the position of prosecutor, judge, and jury—all in one.

From the beginning, the reader must clearly understand that systems analysis and Systems Analysis are two different things. One is a concept—a way of thinking. The other is a particular organization—a group of individuals. One is neutral and objective. The other is institutional and, perforce, subjective. Although these are clear and distinct differences, they are blurred by the authors, who nowhere in their apotheosis of Systems Analysis admit their institutional and subjective nature. Yet it is this side—the institutional and subjective side—that becomes clearer and clearer as the book is analyzed critically.

As one example, the authors commendably claim some Systems Analysis responsibility in the C-5A program. Having once identified with the program, they seem obliged to plead for the continuation of the now quite thoroughly discredited "total package procurement," as well as to offer inaccurate and unneeded defenses of the C-5 itself. To be more specific, they admit to development and production cost growth on the program and attempt to justify it. They tell us, "The cost per ton-mile of airlift capability is still lower with the C-5A than with any other cargo aircraft." One suspects they really mean *operating* cost per ton-mile—but that is a cost unrelated to the development and production cost increases.

In another attempt at self-vindication, they tell us ". . . the C-5A is not an example of cost escalation without a commensurate increase in effectiveness. . . ." Yet the most avid supporter of the C-5 is unable to identify any increase in effectiveness associated with the cost escalation. Clearly, the authors are responding to institutional pressures—not the intellectual and career independence which they claim.

Their subjective treatment of the TFX (F-111) is simply unbelievable. It starts with disclaimers on the basis that Systems Analysis did not exist as a separate organization in 1961 (although earlier in the book the authors describe in great detail how Systems Analysis was erasing large numbers of Warsaw Pact ground and air forces in 1961). This is followed by a rewrite of history—the kind that reorders the facts while they are still fresh in the minds of many people. In one of several admirable defenses of former Defense Secretary Robert S.

McNamara, the readers are told, "The source selection board, composed of Air Force and Navy officers and civilians, had found narrowly in favor of General Dynamics." This is just not true. As painstakingly documented by the Senate Government Operations Committee, in December 1970, the source selection board found in favor of Boeing four times and was finally reversed by the Secretary.

Then, in a form of convoluted logic, we are told, "The judgment that the Navy and the Air Force could use the same plane and that many hundreds of millions of dollars could be saved was sound, but the particular missions conceived by the two Services at the time make it very difficult for a single aircraft to do the job." Obviously, this is another response to institutional pressures and a tribute to personal loyalties, but hardly an example of explicit systems analysis.

There are other examples that show the effects of institutional pressures. Enthoven and Smith, in presenting their own view of history, tell us, "The Snark . . . should never have been developed in the first place." But they fail to mention that the decision was made in 1947 and that their bold assertion is based on twenty years of hindsight.

They casually mention that an updated, older, and slower F-106 interceptor ". . . would provide a lot more for the money in real air defense effectiveness than the newest and fastest plane, the F-12." But they fail to mention the unrealistic and key assumption that was questioned at the time and that events now have shown to be false. They support the view that Soviet MIRVs and improved air defenses ". . . were and are unlikely to appear. . . ." Yet the evidence is such as to raise serious doubts as to the validity of this position.

Viewed in this light, *How Much Is Enough?* could prove to be *too much*. By showing that Lord Acton's admonition on power is applicable to Systems Analysis as an organization, the authors may have done irreparable harm to the concept of systems analysis. Those of their arguments that are poor or weak, and those of their assertions that go unsupported, and their apparent contradictions in a book of only 337 pages detract from some important and fundamental truths.

After all, making a case for legitimate and objective systems analysis is really not that difficult. Few people are willing to argue against the value of independent views or meaningful alternatives. When the authors say ". . . military requirements ought to be determined by reasoned choice with open participation of the responsible government officials," who is going to object? By the same token, the need for "open and explicit analysis" is hardly apt to draw fire. And, of course, no one who reads this book critically should ever question the authors' basic truth in saying, "Exaggerated claims of competence can only lead to disappointment and disillusionment as the facts become known."

—The reviewer, who was personally involved in some of the programs discussed in the book, wishes to remain anonymous.

Military's Time of Troubles

Military Men, by Ward Just. Alfred A. Knopf, New York, 1970. 256 pages. \$6.95.

We all know the cliché about "must reading." So perhaps one ought instead to describe *Military Men* as a "now" book. No matter, Ward Just has written a superb, balanced book on the US Army, on the American military—no, not really; just an excellent book about America today. The questions rending the Army—questions about responsibility, Vietnam, race relations, drugs, the system—are the same questions confronting all the services and, of course, the country.

The measure of Just's success is that he has managed to present the Army with warts, while at the same time convincing us that he is sympathetic. He has blended historical insight, irony, and description into a readable and even exciting whole.

Visiting West Point, Hood, Bragg, Lewis, and suburban communities, Just talks with Army men and their families. In relaxed conversations with generals, sergeants, privates, and their wives (defending who their husbands are and what they do), we are given sparkling insights into the agonies and rewards of military life. The urgent questions frequently elicit no really clear answers.

"Society's distrust of soldiers," Just observes, "is equaled only by the distrust of soldiers for society, or that part of it . . . 'the liberals'—which they feel have brought them under attack." Suspicious and angry, "the professionals have drawn together at the barricades of the institution."

The themes repeat themselves like a rutted record. There are no more heroes, only managers, technocrats. And "the system seems to wear most men as smooth as a beach pebble." When it comes to the combat commander, there is no place for reflection, for doubt. For "who wants Jonathan Swift out there on point, mixing it up with the Cong?"

And so inevitably it is Vietnam. Vietnam tearing the Army apart. A bad dream that keeps recurring. As a senior American general in Vietnam put it: "I will be damned if I will permit the US Army, its institutions, its doctrine, and its traditions to be destroyed just to win this lousy war." And who is responsible? To the senior officers, "it is the arrogance of McNamara," to the younger men, "the rigidity of Westmoreland." To Ward Just, Westmoreland appears a very decent man who reflects some of the best and some of the worst in the Army today.

Maxwell Taylor comes through badly flawed, mistaken on Vietnam, and a heavyweight with his influence on Presidents Kennedy and Johnson—a case of obsession with flexible response as a backlash to the Eisenhower years of massive retaliation. And here are Bundy and Rostow, of course, driving down the counterinsurgency road. Perhaps the major civilian deficiency was the failure to draw precise war aims—"the civilians in the White House and the Pentagon did not know what it was they wanted. . . ."

It is all here in its awful complexity. Above all, the message seems to be that we have simply got to have a clear vision of where we are going.

An important book. Read it.

—Reviewed by Herman S. Wolk, Office of Air Force History, Headquarters, USAF.

Midcentury Miracle

The Emerging Japanese Superstate: Challenge and Response, by Herman Kahn. Prentice-Hall, Englewood Cliffs, N.J., 1970. 274 pages with appendix and index. \$7.95.

The very title of Herman Kahn's newest work is stimulating and thought-provoking. For who would have thought only a few years ago that tiny Japan would emerge a superpower in a world intent upon developments in the United States, the Soviet Union, and a united Europe? But one need read only a few pages of this excellent analysis of the Japan of the 1970s to be persuaded that it is high time we paid attention to the

startling achievements and potential of the new Japan.

Consider the record of economic progress. The smallest of present-day major powers in 1945, Japan rapidly closed the gap during the 1950s. In the sixties, she overtook one major power after another. In terms of total production as measured by gross national product (GNP), Italy and China were surpassed early in the decade and were followed by France in 1964, England in 1965, and Germany in 1968. Japan is now third, behind the US and the USSR.

In terms of per-capita income, a measure of living standards, Japan overtook Italy in 1967 and Russia in 1968. Although she still has some way to go before catching up with England, France, and Germany (who among major powers now rank fourth, third, and second, respectively, in per-capita income), there is little doubt that Japan soon will be second only to this country.

What about Japan's economic future? Is there a chance that Japan could match the total production of the two giant economies? There is decidedly such a possibility. Kahn presents some of the possibilities by projecting four alternative growth trends over the period 1971–2000. These alternative growth rates range from a high of eleven percent per year (the average Japan recorded during the sixties) to a low of five and a half percent per year (compared with the four percent per year recorded by the US from 1960–69).

While the reader is free to make his own choice as to which of the projections is most likely to be verified over the next thirty years, Kahn himself favors what he terms a medium projection of about nine percent per year. This rate, he believes, would overtake not only Russian GNP, but American per-capita GNP by 1990, and American total GNP by the end of the century.

Relative economic-growth projections inevitably raise questions as to the sustainability of high growth rates. To his credit, Kahn considers a dozen factors seen by other observers as tending to slow the Japanese rate of growth. But he argues convincingly that those factors are exaggerated in importance, and he counters with his own reasons for expecting continued rapid growth.

However Japan fares in the future, it is undeniable that she has already achieved superstate status economically. Kahn goes on to explore the possible political and military directions that Japan might take with her economic strength. It is easy to imagine ominous prospects, recalling the

Airman's Bookshelf

imperialistic behavior of the Japan of the thirties and forties, but Kahn is much more optimistic than that.

Without making specific predictions, he tells us much about their capabilities and inclinations. An enlightening chapter on the Japanese mind provides some generalizations based on Japanese history that lend insight into their attitudes toward business, government, military, and economic achievement.

Politically, Kahn sees Japan becoming far more active and influential in the seventies than her "low-profile" behavior in the past twenty-five years. Beginning from an enviable position of congeniality with all the world's conflicting powers (Japan has managed to get along with both Chinas, both Koreas, both Vietnams, and with the US as well as the USSR), she appears capable of exerting a stabilizing influence in the world at the same time that she pursues her own national interests.

Militarily, Kahn questions the presumption that the Japanese are staunchly pacifistic and that they will remain antimilitaristic. Instead, he expects that Japan will easily rationalize a significant military force as consistent with a self-defense posture. Though currently devoting less than one percent of GNP to defense, the Japanese government already plans to increase that proportion to one and a half percent. At current rates of eco-

nomie growth, that could mean a \$5 billion defense budget by 1975.

The emergence of the Japanese superstate carries far-reaching implications for all of the world. This excellent short monograph is an invaluable reference for all who seek a perspective on the international prospects for the balance of the twentieth century.

—Reviewed by Maj. Edward L. Claiborn. Major Claiborn is an Associate Professor of Economics at the Air Force Academy.

History As It Unfolds

The Road From War: Vietnam, 1965-1970, by Robert Shaplen. Harper and Row, New York, 1970. 368 pages with index. \$7.95.

The author has added this book, a consolidation of twenty-two articles that appeared in *The New Yorker*, to his previous two on Southeast Asia. In 1965 he wrote *The Lost Revolution* to portray what happened in Vietnam between 1945 and 1965. Shaplen produced *Time Out of Hand*, a more generalized work on Southeast Asia, in 1969.

In this one, published in September 1970, Shaplen has put together his thoughts, observations, and appraisals of the half decade that saw the United States go from limited involvement to heavy commitment in a war that still isn't over. At the end of the book, he says the American government is on its way "from" war in South Vietnam, but its fighting role clearly is not over, and no one, not even Shaplen, could logically prophesy when it will end.

Shaplen, a correspondent with extensive experience in Asia, does not present an historical summary of the war. Instead, he has done an admirable job of what he terms "interpretive reportage" on "history as it unfolded." The reader must, therefore, bring the historical facts with him as he progresses through the author's detailed coverage of the Vietnamese labyrinth. He does, at least, remind his reader of the events which prompted each article, as he introduces much new material on men, groups, and movements unfamiliar to the average student of Vietnam.

There are few weak arguments in the book, but one of the most perplexing is the author's overcautious treatment of advances or victories by the South Vietnamese and Americans. They have not been accomplishments that could be compared favorably with great victories in other wars, but perhaps historians with more complete information will judge differently from Shaplen. He often begins by showing the apparently good results of major events, then "analyzes" the optimism away.

The author's overall opinion is that South Vietnam is still hopelessly divided despite the war that developed so tragically from 1965 to 1970. The United States, he asserts, may have only succeeded, through overinvolvement, in preventing the Vietnamese from reaching a truly Asian solution. Shaplen's style and depth of knowledge make the book a valuable contribution to the literature on the Vietnam conflict.

—Reviewed by Capt. Charles A. Nicholson. Captain Nicholson is a member of the Air Force Academy History faculty.

New Books in Brief


Air Facts and Feats, compiled by Francis K. Mason and Martin C. Windrow. This book, first published by the originators of the *Guinness Book of Records*, is much more than a compendium of firsts and records in the history of flight. It's full of fascinating facts about the people, and their balloons, airplanes, and rockets, who have made aerospace power a fundamental part of the civilian and military scenes. The book is illustrated with hundreds of sketches, photographs, and color plates. Doubleday, Garden City, N.Y., 1970. 223 pages with index. \$8.95.

Aircraft Seventy One, edited by J. W. R. Taylor. An attractive, well-illustrated book that includes twelve chapters on such diverse subjects as military aviation in India, New Zealand's aircraft industry, the USSR's airline (Aeroflot), the Concorde supersonic transport, and Apollo-11. The Collector's Corner has pictures of unusual airplanes, and there is a News-of-the-Year roundup. Arco Publishing Co., N.Y., 1970. 96 pages. \$3.95.

Fundamentals of Aircraft Piston Engines, by Norman E. Borden, Jr., and Walter J. Cake. A well-illustrated, short handbook on piston-engine systems, with special attention given to the new opposed engines used in today's private and business aircraft. It provides essential background for working with manufacturers' engine and flight manuals. Hayden Books, 116 W. 14th St., New York, N.Y., 1971. 192 pages with index. \$4.95 paperback.

Up and At 'Em, by Harold E. Hartney, edited by Stanley M. Ulanoff. One for the World War I buffs. This latest addition to Doubleday's Air Combat Classics series is the war memoirs of Lt. Col. Harold E. Hartney, commander of the famed First Pursuit Group. Hartney had flown with the Canadians before joining the US Air Service. The book's appendix includes a short history of the US Air Service in World War I, combat scores of the leading aces, and other data of historical interest. Doubleday, Garden City, N.Y., 1971. 360 pages with appendix. \$6.95.

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The Bulletin Board

By Patricia R. Muncy

ASSISTANT FOR MILITARY RELATIONS

Reserve Chief Retires

Maj. Gen. Tom E. Marchbanks, Jr., the first Chief of Air Force Reserve, retired from active duty on February 1.

General Marchbanks was appointed to head the then newly created Office of Air Force Reserve by President Lyndon B. Johnson in December 1967; the appointment was confirmed by the Senate, and he was promoted to two-star rank in February 1968.

During his Pentagon tour as the top Air Force Reservist, General Marchbanks was instrumental in streamlining the command and management structure of the 500,000-member Air Force Reserve.

Under his leadership the Air Force Reserve began a modernization program with new aircraft and new missions.

Today, Air Force Reservists are flying C-141 cargo jets with the Military Airlift Command, as well as C-130 turboprop troop and cargo carriers, A-37 jet fighter-bombers, and the O-2 forward air controller aircraft in support of Tactical Air Command. All these aircraft have seen frontline service in Southeast Asia.

Other improvements in support units and individual Reservist programs achieved under General Marchbanks' direction have made the Air

Force Reserve much more responsive than previously to Air Force and national defense needs.

General Marchbanks' retirement ended a distinguished military career of more than twenty-eight years of active and Reserve service. His successor had not been announced at this writing.

Second Careers

In the early 1960s, AFA took the lead among service organizations in exploring the employment opportunities for retiring military personnel and in publicizing the difficulties then encountered by the professional military man in finding a second career in the civilian world.

One area promising great potential for rewarding second careers was that of state, municipal, and county government. Supported by AFA, an in-depth study was prepared by Maj. Donald B. McBride, who found that retirees were overlooking opportunities at all levels of local government. It also was apparent that personnel directors were interested in filling supervisory and "middle manager" positions with experienced people who had military skills that were transferable with little or no training. Employment at local and state government levels has



Lt. Col. Willard Plentl, USAF (Ret.), has been appointed by President Nixon to the National Aviation Advisory Commission. Last October he was elected President of the National Association of State Aviation Officials. See text for details of his highly successful "second career."

been both intellectually satisfying and economically rewarding for many retirees.

One case in point is that of retired Air Force Lt. Col. Willard G. Plentl, who heads Virginia's State Corporation Commission, Division of Aeronautics.

Following his retirement in 1962, Colonel Plentl was appointed Assistant Director of the Division of Aeronautics; he advanced to Director of the Division in 1964. Since that time, the Division has expanded several times, and many new programs have been instituted to promote and develop Virginia's aviation community. Flight safety programs include pilot and mechanic refresher courses, semiannual airport inspections, and many others. Aerospace education programs include teacher workshops, high school and college programs, Youth First Flight, and other youth-orientation programs

Maj. Gen. Tom E. Marchbanks, Jr. (right), was recently cited by AFA for his more than twenty-eight years of outstanding service and dedication to the USAF and the country. The citation was presented by AFA Assistant Executive Director John O. Gray at a preretirement dinner in the General's honor given by his staff. A long-time member of AFA, General Marchbanks served on the President's Air Reserve Advisory Council from 1964 to 1967.



in cooperation with the State Department of Education.

Continued emphasis on airport improvement and development programs has resulted in Virginia's having ninety-three licensed commercial airports and four licensed commercial heliports.

Serving on Colonel Plentl's administrative staff are four other Air Force retirees and one Navy retiree, all of whom have extensive flying backgrounds. They are Maj. Kenneth Rowe, Assistant Director; Lt. Col. P. G. Helton, Chief of Aerospace Education and Safety; Lt. Col. Robert E. Noziglia, Assistant, Aerospace Education and Safety; Maj. James H. Gray, Assistant Airport Engineer; and Cmdr. J.S. Dodge, Chief Electronics Engineer.

Two other key staff members who have served with the Air Force, and who are presently active in the Virginia ANG, are Chief of Publications John R. Shurley and Airport Planner James P. Gunter.

Professional Education

Relatively few of the thousands of officers eligible for the Air War College will be favored with selection. For those who are not, the Air University offers both correspondence and seminar programs.

The Air War College Associate Programs consist of a combination of correspondence and seminar activity. The Correspondence Program includes both individual and group study courses and features self-study followed by careful evaluation of each student's progress by members of the AWC faculty. The Correspondence Group Study Program is a new program that has been initiated for National Guard and Reserve personnel. Students are enrolled and administered as individuals in the Correspondence Program. However, they supplement their individual work by periodic meetings of study groups for discussion of assigned subject matter.

The seminars, consisting of twelve to fifteen senior active-duty officers and high-level civilian employees, are conducted at selected Air Force bases. Lieutenant colonels or lieutenant colonel-selectees or higher, and civilian GS-13s or higher, are eligible for both programs. Majors who have completed the Air Command and Staff College are eligible for the AWC Correspondence Program.

In both programs, the objectives and philosophy are identical to those of the resident courses—to advance the individual's professional military education. Detailed information can be secured from local Base Education



Debby and Merle McCallister unveil a memorial plaque honoring their father, the late Lt. Col. David F. McCallister, at the entrance of the new McCallister Dining Hall, at the Delaware ANG's 166th Military Airlift Group, New Castle, Del. David "Snapper" McCallister had been group commander before his death in 1961. The plaque and a mural in the dining hall are by SSgt. Jamie Wyeth, Delaware ANG's illustrator.

Offices or by writing to the Associate Program (AWCEDAC), Air War College, Maxwell AFB, Ala. 36112.

PHS vs. VA

The word that President Nixon is weighing a proposal to close down a number of Public Health Service hospitals and outpatient clinics has created much concern among certain congressional leaders and military service organizations. By law, the hospitals are required to treat merchant seamen, retired members of the armed services, Coast Guardsmen, PHS and National Oceanic and Atmospheric Administration personnel, and their dependents. According to Elliot L. Richardson, Secretary of Health, Education and Welfare, the existing PHS hospitals are becoming "increasingly inefficient" and cannot provide high-quality health care without undergoing extensive modernization.

A number of congressional leaders believe that now is the worst possible time to close down any hospitals and that the Administration's proposal to rely on VA hospitals to take over the PHS caseload is unrealistic.

At the same time, Donald E. Johnson, head of the Veterans Administration, announced that the VA had committed some \$72.4 million for modernization and construction at many of its 166 hospitals. This includes \$34.3 million for a new 760-bed hospital in San Antonio. Johnson said that construction projects also included eight intensive-care units, with a total of 145 beds for those patients requiring more than normal care. Another project involved the construction of a

new, twenty-four-bed, spinal-cord injury unit at the VA hospital in Houston.

The VA hospital system is the largest in the nation.

Airmen Incentive Pay

The Air Force will expand its airman incentive pay program on July 1, 1971, when it adds proficiency pay for superior performance and for special-duty assignments. Existing incentive pays include regular and variable reenlistment bonuses and proficiency pay for selected specialties in which the Air Force has a career manning shortage.

The purpose of the new superior performance pay is to encourage and reward outstanding performance in specialties where other kinds of pro pay are not authorized. About 62,000 airmen, representing fifteen percent of the total eligible, will begin receiving \$30 a month for a twelve-month period beginning July 1. Selection procedures are to be announced by the Air Force prior to April 1.

The purpose of the special-duty assignment proficiency pay is to maintain adequate volunteer manning in special-duty assignments, such as recruiting, which are outside the normal career progression pattern and not intended for a full career. The monthly rate of this pay will depend on the manning level and number of volunteers in the particular special-duty assignment.

JOAC Recommendations

Lt. Gen. Robert J. Dixon, DCS/Personnel, Hq. USAF, has responded

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to the recommendations submitted to the Air Force by AFA's Junior Officer Advisory Council. In forwarding the Air Staff comments, General Dixon expressed his appreciation for the interest and concern shown by the Council members and commended them for their contributions.

On those recommendations to which the Air Force reacted favorably, General Dixon advised:

- That the Secretary of the Air Force has recommended to the Secretary of Defense that H.R. 16771, which would provide for funded travel for military members to be accompanied by their dependents on intra-theater, consecutive overseas tours, be carried over in its legislative package to the Ninety-second Congress.

- That the current requirement for major commands to conduct clinics, seminars, and conferences will be expanded by suggesting that commands convene such conferences/seminars as a major command preparation activity for the USAF-wide Career Motivation Conference.

- That the establishment of a USAF-wide seminar-type program at base level for junior and senior USAF officers to meet and exchange ideas of mutual interest and concern will be included as an objective of the JOC in AFM 35-16, USAF Career Motivation Program for Officers and Airmen.

AFA/ROTC Affairs

James A. McDonnell, Jr., Deputy Assistant Executive Director of the Air Force Association, has recently assumed the additional staff responsibility of Director of ROTC Affairs.

Mr. McDonnell will be responsible for coordinating and implementing AFA activities related to the Air Force ROTC Program, with emphasis on the Arnold Air Society and Angel Flights. He will be the staff contact with the Arnold Air Society Secretariat in Washington, with National Headquarters of both Arnold Air Society and Angel Flights, with appropriate officers and civilian leaders at Headquarters USAF, and at ROTC Headquarters, Maxwell AFB, Ala.

In addition, Mr. McDonnell will coordinate the activities of the AFA Arnold Air Society Alumni Council, Junior Officer Advisory Council, and Airmen Council.

In making the announcement, James H. Straubel, AFA Executive Director, stated, "I hope this consolidation of

duties, as outlined, will strengthen not only our relationship with the ROTC program and related activities, but will increase our capability in dealing with youth issues of the day. Thus, it is hoped that Jim's efforts will strengthen our position in both membership and leadership as they relate to the participation of young people."

Parting Shots

- ⊕ Air National Guard pilot and navigator trainees scheduled for flying training after September 1, 1971, will attend the newly established Officers Preparatory Academy at McGhee Tyson Airport, Knoxville, Tenn. This five-week course will satisfy professional military education and basic military requirements.

- ⊕ The Air Force Junior ROTC Program and Civil Air Patrol play an important part in providing citizenship training and in motivating their students toward the Air Force. In recognition of the valuable services of these two programs, AFROTC will reserve one four-year AFROTC scholarship for a CAP cadet from each state and Puerto Rico and one for an AFJROTC cadet from each junior unit. The first scholarships under this program will be awarded for use in FY 1971-1972.

- ⊕ Reminder: Public Law 91-230, dated April 13, 1970, provides authority for cancellation of National Defense Education Act student loan indebtedness for those serving in the armed forces after June 30, 1970. Up to fifty percent of a loan granted after April 13, 1970, may be forgiven. The rate of forgiveness is 12.5 percent per year, including interest for each year of consecutive military service. Inter-

ested students should contact their college student loan office for information regarding application procedures for these loans.

- ⊕ President Nixon has signed into law new education benefits for wives and children of prisoners of war, and for servicemen who have served 181 days of active duty rather than two years as was previously required. The new benefits became effective December 24, 1970, according to VA Administrator Donald E. Johnson.

- ⊕ The 1,000 wives of American servicemen missing or captured in Vietnam make up only a small percentage of the 580,000 women eligible for educational benefits, home loans, or both. The largest group eligible for VA programs is 180,000 female veterans of World War II and the Korean conflict—their unused, expired loan benefits were restored by law last October.

- ⊕ Medical Air National Guardsmen and Air Force Reservists are invited to attend the Eighth Annual Reserve Forces Medical Symposium in Houston, Tex., from April 26 to 29. The symposium, jointly sponsored by the Air National Guard and Air Force Reserve, will be held at the Shamrock Hilton Hotel in conjunction with the 42d Annual Scientific Meeting of the Aerospace Medical Association. Air Force Reserve medical unit commanders and chief nurses may attend in an official status. Other personnel in units and those holding Mobilization Assignments will be able to attend to earn training points only. Reservists and Guardsmen in units can get more detailed information from their unit commanders. Mobilization augmentees should address inquiries to the major air command to which assigned. ■



Cadet Col. Susan A. Orkins, Commander of the Cadet Wing at Ohio State University, makes a classroom presentation to fellow cadets. The twenty-two-year-old senior is the first coed to command an Air Force ROTC cadet wing. She is to be commissioned upon graduation in June and hopes to be assigned as a biomedical sciences officer.

Senior Staff Changes

B/G James A. Bailey, from Cmdr., Pacific Exchange System, PACAF, Honolulu, Hawaii, to Asst. DCS/Comptroller, Hq. AFLC, Wright-Patterson AFB, Ohio . . . **M/G Royal N. Baker**, from Cmdr., 17th AF, USAF, Ramstein AB, Germany, to Chief, MAAG, Bad-Godesberg Army Base, Germany . . . **B/G Frederick C. Blesse**, from Cmdr., 831st Air Div., TAC, George AFB, Calif., to Asst. DCS/Ops, 7th AF, PACAF, Tan Son Nhut Airfield, Vietnam . . . **M/G Gordon F. Blood**, from DCS/Ops & Intelligence, AFCENT, Brunssum, Netherlands, to Cmdr., 12th AF, TAC, Bergstrom AFB, Tex., replacing retiring **M/G Albert W. Schinz** . . . **M/G Ernest T. Cragg**, from Dep. Dir., to Dir., Aerospace Programs, DCS/Programs & Resources, Hq. USAF, replacing retiring **M/G Andrew S. Low, Jr.** . . . **B/G Darrell S. Cramer**, from Dir., Combat Ops, 7th AF, PACAF, Tan Son Nhut Airfield, Vietnam, to Vice Cmdr., 17th AF, USAF, Ramstein AB, Germany, replacing **B/G Charles E. Yeager**.

M/G George J. Eade, from Dir., Plans, DCS/P&O, to Asst. DCS/P&O, Hq. USAF, replacing **M/G John M. McNabb** . . . **B/G Alfred L. Esposito**, from Systems Program Dir., F-111 Program, to Dep., Systems Management, ASD, AFSC, Wright-Patterson AFB, Ohio . . . **Col. (B/G Selectee) Eugene W. Gauch, Jr.**, from Executive to the Cmdr., to Chief of Staff, TAC, Langley AFB, Va. . . **B/G (M/G Selectee) James A. Hill**, from DCS/Ops, MAC, Scott AFB, Ill., to Dep. Dir., Aerospace Programs, DCS/Programs & Resources, Hq. USAF, replacing **M/G Ernest T. Cragg** . . . **M/G James M. Keck**, from Dep. Dir., Ops, to Dir., Plans, DCS/P&O, Hq. USAF, replacing **M/G George J. Eade** . . . **B/G Leroy J. Manor**, from Cmdr., USAF Spec. Ops Force, TAC, Eglin AFB, Fla., to Special Asst., Counterinsurgency and Special Activities, The Jt. Staff, JCS, Hq. USAF . . . **Col. (B/G Selectee) Robert C. Mathis**, from Cmdr., Rome Air Development Ctr., AFSC, Griffiss AFB, N.Y., to Systems Program Dir., F-111 Program, ASD, AFSC, Wright-Patterson AFB, Ohio, replacing **B/G Alfred L. Esposito**.

M/G John M. McNabb, from Asst. DCS/P&O, Hq. USAF, to DCS/Plans, Hq. PACAF, Hickam AFB, Hawaii . . . **Col. (B/G Selectee) Travis R. McNeil**, from Cmdr., 1st Tac. Ftr. Wg., TAC, to Dep. Dir., US Strike Cmd., MacDill AFB, Fla. . . . **B/G George E. Schafer**, from Dep. Cmd. Surgeon, MAC, Scott AFB, Ill., to Cmdr., Aerospace Medical Div., AFSC, Brooks AFB, Tex., replacing retiring **M/G Charles H. Roadman** . . . **M/G Dale S. Sweat**, from DCS/Plans, USAF, Wiesbaden AB, Germany, to Cmdr., 17th AF, USAF, Ramstein AB, Germany, replacing **M/G Royal N. Baker** . . . **B/G George K. Sykes**, from DCS/Intelligence, 7th AF, Tan Son Nhut Airfield, Vietnam, to Vice Cmdr., USAF Security Service, San Antonio, Tex. . . . **B/G James H. Watkins**, from DCS/Ops, ATC, Randolph AFB, Tex., to Chief, AF Advisory Gp., USMACV, Tan Son Nhut Airfield, Vietnam . . . **B/G Charles E. Yeager**, from Vice Cmdr., 17th AF, USAF, Ramstein AB, Germany, to US Defense Representative, Rawalpindi, Pakistan, replacing **B/G Harold E. Collins**.

PROMOTIONS: To be Major General: **Joseph H. Belser**; **Devol Brett**; **Richard C. Catledge**; **Levi R. Chase**; **Ray M. Cole**; **Martin G. Colladay**; **Woodard E. Davis, Jr.**; **Abraham J. Dreiseszun**; **William J. Evans**; **Salvador E. Felices**; **James O. Frankosky**; **Jack K. Gamble**; **Robert N. Ginsburgh**; **Homer K. Hansen**; **Clifford W. Hargrove**; **James A. Hill**; **William H. Holt**.

James D. Hughes; **Robert E. Huyser**; **Clare T. Ireland, Jr.**; **Leo C. Lewis**; **George H. McKee**; **Douglas T. Nelson**; **Lee M. Paschall**; **James L. Price**; **Robert E. Pursley**; **Maurice R. Reilly**; **John W. Roberts**; **DeWitt R. Searles**; **Alton D. Slay**; **Foster L. Smith**; **Maxwell W. Steel, Jr.**; **James H. Watkins**; **Kendall S. Young**.

To be Brigadier General: **Charles J. Adams**; **Thomas A. Aldrich**; **Jesse M. Allen**; **Conrad S. Allman**; **Andrew B. Anderson, Jr.**; **Earl J. Archer, Jr.**; **Van N. Backman**; **John C. Bartholf**; **Jack Bellamy**; **James M. Breedlove**; **Charles E. Buckingham**; **William C. Burrows**; **Harry M. Chapman**; **Keith**

L. Christensen; **Wilbur L. Creech**; **Harry M. Darmstandler**; **Robert L. Edge**; **Billy J. Ellis**; **Gerald G. Fall, Jr.**; **Lincoln D. Faurer**.

Howard M. Fish; **Lawrence J. Fleming**; **Lawrence A. Fowler**; **Raymond B. Furlong**; **Eugene W. Gauch**; **Herbert J. Gavin**; **William W. Gilbert**; **Alden G. Glauch**; **Abbott C. Greenleaf**; **Colin C. Hamilton, Jr.**; **Edgar S. Harris**; **Gerrit L. Hekhuis**; **Jeanne M. Holm**; **Malcolm P. Hooker**; **Hubert O. Johnson, Jr.**; **Lester T. Kearney, Jr.**; **John R. Kern, Jr.**; **Larry M. Killpack**; **James A. Knight, Jr.**; **Howard M. Lane**; **Robert C. Mathis**.

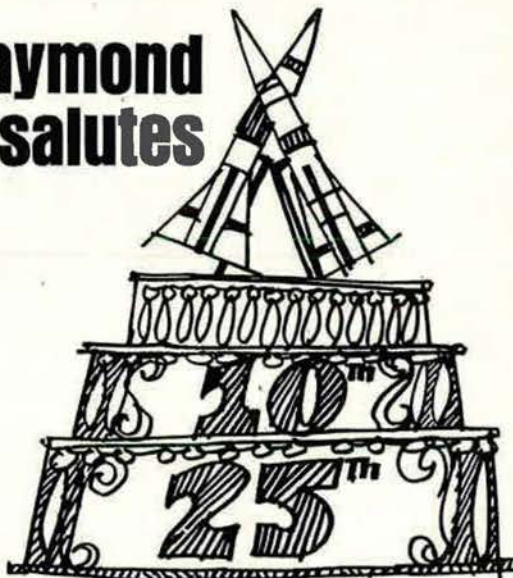
James A. McDivitt; **Edward P. McNeff**; **Travis R. McNeil**; **Charles F. Minter, Sr.**; **Slade Nash**; **Milton E. Nelson**; **Lewis S. Norman, Jr.**; **Donald G. Nunn**; **Russell G. Ogan**; **Walter P. Paluch, Jr.**; **George A. Pappas**; **Edmund A. Rafalko**; **James G. Randolph**; **Edwin W. Robertson**; **Evan W. Rosencrans**; **Kendall Russell**; **Ralph S. Saunders**; **George E. Schafer**; **Brent Scowcroft**; **Wiltz P. Segura**; **Frank J. Simokaitis**; **Henry Simon**; **Ray B. Sitton**; **Grant R. Smith**; **Howard P. Smith, Jr.**

James L. Stewart; **Harold A. Strack**; **Eugene F. Tighe, Jr.**; **Robert F. Trimble**; **Henry L. Warren**; **Donald L. Werbeck**; **John H. Wilkins**.

Air National Guard: Nominated to Major General: **Clarence E. Atkinson**. Nominated to Brigadier General: **George N. Masterson**; **Raymond C. Meyer**; **Walter B. Staudt**; **Stanley L. Vihtelic**; **Roland R. Wright**.


RETIREMENTS: **M/G Andrew S. Low, Jr.**; **M/G Tom E. Marchbanks, Jr.**; **M/G Charles H. Roadman**; **M/G Albert W. Schinz**; **M/G Ralph G. Taylor**. ■

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AFA'S COMMITTEES AND

Executive Committee

Composed of the President (who also acts as Chairman), Secretary, Treasurer, and five additional members of the National Board of Directors, the Committee acts on behalf of the Board of Directors between meetings of the Board. The Executive Committee also functions as the Resolutions Committee.



From left to right: George D. Hardy, Hyattsville, Md., Chairman; Will H. Bergstrom, Colusa, Calif.; John G. Brosky, Pittsburgh, Pa.; Jack B. Gross, Harrisburg, Pa.; Sam E. Keith, Jr.,

Fort Worth, Tex.; Jess Larson, Washington, D.C.; Nathan H. Mazer, Ogden, Utah; and Warren B. Murphy, Boise, Idaho.

Finance Committee

Composed of the Treasurer and six other Association members as appointed by the President, the Committee is responsible for recommending fiscal policy to the President.



From left to right: Jack B. Gross, Harrisburg, Pa., Chairman; Maxwell A. Kriendler, New York, N.Y.; Jess Larson, Washington, D.C.; Carl J. Long, Pittsburgh, Pa.; Earle N. Parker, Fort

Worth, Tex.; Peter J. Schenk, Arlington, Va.; and Robert W. Smart, Washington, D.C.

Constitution Committee

Responsible for a continuing review and updating of the Association's Constitution and By-Laws, and for recommending to the President necessary amendments to the Constitution and/or By-Laws.



From left to right: Julian B. Rosenthal, New York, N.Y., Chairman; John G. Brosky, Pittsburgh, Pa.; Martin M. Ostrow, Beverly Hills, Calif.; and Hugh W. Stewart, Tucson, Ariz.

Convention Site Committee

Responsible for recommending to the President a listing of those cities suitable for a National Convention.



From left to right: George D. Hardy, Hyattsville, Md., Committee Chairman; and Members Jack B. Gross, Harrisburg, Pa.; and Jess Larson, Washington, D.C.

COUNCILS

An invaluable adjunct to the Air Force Association President are the AFA Committees and Advisory Councils, whose members for the current year are shown on these and the following pages. These hard-working men make up part of what could be thought of as AFA's "All-Volunteer Force." Except as noted, the chairmen and members are appointed annually by the AFA President . . .

Organizational Advisory Council

This year, the Council is composed of three Vice Presidents, one of whom acts as Chairman; two State representatives and two Chapter representatives. The Council advises the President on matters pertaining to State and Chapter programming, reporting procedures for field units, etc.



From left to right: Lester C. Curl, Melbourne Beach, Fla., Chairman; Cecil G. Brendle, Montgomery, Ala.; B. L. Cockrell, San Antonio, Tex.; Paul W. Gaillard, Omaha, Neb.; William H.

Kelly, Savannah, Ga.; Jack C. Price, Clearfield, Utah; and Edward A. Stearn, San Bernardino, Calif.

Recommends to the Association President policies in support to the Air Force Reserve. One of AFA's oldest advisory groups, it is concerned with programs and legislation affecting both units and individual Reservists. This year, the Council is composed of representatives from both the unit and individual training elements of the program.

Air Reserve Council



From left to right: Maj. Gen. John S. Bagby, Berwyn, Pa., Chairman; Col. Walter E. Barrick, Jr., Danville, Va.; Capt. Douglas P. Bennett, Chevy Chase, Md.; Col. Harry J. Huff, II, Riverside, Calif.; Brig. Gen. Campbell Y. Jackson, Mt. Holly,

N.J.; 1st Lt. Dorothy A. McDonnell, St. Louis, Mo.; Lt. Col. Joe L. Shosid, Fort Worth, Tex. Consultants to the Council are Brig. Gen. Charles D. Briggs, Jr., Bedford, Mass.; and Maj. Gen. R. E. L. Eaton, USAF (Ret.), Chevy Chase, Md.

Air National Guard Council

Recommends to the President policies and appropriate methods by which the Association can demonstrate its support of the Air National Guard in the most effective manner. Council members are chosen to represent all elements of the Air National Guard.



From left to right: Maj. Gen. Benjamin J. Webster, Honolulu, Hawaii, Chairman; Capt. Myron O. Everson, Milwaukee, Wis.; Maj. Gen. John P. Gifford, Nashville, Tenn.; Capt. R. Clark Higgins, Greenbelt, Md.; Col. Curtis J. Irwin, Syracuse, N.Y.;

Col. Alexander P. Macdonald, Fargo, N.D.; Lt. Col. Edmund C. Morrissy, Jr., Alcoa, Tenn.; and Council Consultant, Brig. Gen. Willard W. Millikan, Washington, D.C.

Medical Advisory Council

Advises the President in areas affecting Air Force medical personnel, both in the active establishment and the Reserve Forces, and military medical programs for the benefit of all Air Force personnel. This year's Council members include active Reservists, Guardsmen, and a retiree from the Regular Air Force.



From left to right: David Waxman, M.D., Kansas City, Kan., Chairman; Bruce J. Morrow, D.D.S., Macomb, Ill.; Dalton S. Oliver, M.D., Baton Rouge, La.; Lawrence V. Phillips, M.D., Temple Hills, Md.; Ralph A. Skowron, M.D., Cherry Hill, N.J.;

James L. Tucker, Jr., M.D., Abilene, Tex.; Barnett Zumoff, M.D., Bronx, N.Y.; and Council Consultant, Maurice I. Marks, M.D., El Paso, Tex.

Airmen Council

Created as a standing committee in 1961 by convention resolution, the Council advises the President on all matters pertaining to the interests and well-being of Air Force enlisted personnel, both active duty and in the Reserve Components. Three members of this year's Council are former Outstanding Airmen of the USAF.



From left to right: CMSgt. Jesus Morado, Maxwell AFB, Ala., Chairman; CMSgt. Paul J. D. Barton, Eglin AFB, Fla.; CMSgt. Jimmie L. Collins, Vandenberg AFB, Calif.; CMSgt. Bobby L. Gonshor, USAFR, Kelly AFB, Tex.; CMSgt. Victor P. Tron,

Jr., Minot AFB, N.D.; CMSgt. Richard E. Vincent, ANGUS, Alcoa, Tenn.; CMSgt. Freddie J. Walton, Hamilton AFB, Calif.; and Consultant to the Council, Chief Master Sergeant of the Air Force Donald L. Harlow, Hq. USAF.

In 1967, the JOAC was formed to help convey AFA's interest in officer career motivation and retention, and to stimulate interest among young officers in AFA activities at both national and local levels. It advises the President on matters pertaining to active-duty junior officers. Membership is rotated among the major air commands.

Junior Officer Advisory Council



From left to right: Council Chairman, Capt. Robert E. Frank, Defense Construction Supply Center, Columbus, Ohio; Capt. Bruce E. Dunn, Ent AFB, Colo.; Capt. James D. Grapentine, Griffiss AFB, N.Y.; 1st Lt. Ronald H. Greenfield, Air Force

Academy, Colo.; Capt. Gil L. Gillespie, Laredo AFB, Tex.; Capt. Douglas A. Patterson, Scott AFB, Ill.; Capt. Raleigh A. Sandy, Jr., Korat AB, Thailand; and Consultant, Maj. Donald E. Bургgrave, Randolph AFB, Tex.

Civilian Personnel Council

Advises the President on matters pertaining to the effective utilization of Civil Service employees of the Air Force; and seeks to promote greater understanding between civilian employees and uniformed members of the Air Force at all levels.



From left to right: Chairman, Robert L. Hunter, Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio; George F. Brennan, Defense Atomic Support Agency, Arlington, Va.; Arthur O. de la Garza, San Antonio Air Materiel Area, Kelly AFB, Tex.; Nolan W. Manfull, Defense Contract Administration Services, Salt Lake City, Utah; James B. Minor, Depart-

ment of Transportation, Washington, D.C.; William A. Owen, Air Training Command, Randolph AFB, Tex.; John E. Zipp, Air Force Accounting and Finance Center, Colo.; and Council Consultants, W. James Abernethy, Office of Secretary of Defense, Washington, D.C.; and Donald S. Dawson, Washington, D.C.

Formerly the Retired Council, the name was changed in 1968 when the group's scope of interest was broadened to encompass other segments of the military population, such as veterans, short-term enlistees and draftees. The Council still devotes much of its time to such retiree matters as recomputation of pay, dual compensation, job opportunities, and survivors' benefits. It is the only AFA Council to have representation from the other services.

Military Manpower Council



From left to right: Gen. Jacob E. Smart, USAF (Ret.), Arlington, Va., Chairman; Col. Francis S. Gabreski, USAF (Ret.), Dix Hills, N.Y.; Maj. Gen. James F. Hackler, USAF (Ret.), Myrtle Beach, S.C.; Capt. David L. Hosley, USAF, Tucson, Ariz.; Lt. Gen. Sam Maddux, Jr., USAF (Ret.), San Antonio, Tex.; Col.

William C. Robinson, USAF (Ret.), Alexandria, Va.; Maj. Thomas F. Seebode, USAF, San Antonio, Tex.; and Consultants to the Council, Gen. Charles F. Bolté, USA (Ret.), Alexandria, Va.; and Capt. Frederic A. Wyatt, USNR, North Hollywood, Calif.

Arnold Air Society Alumni Council

AFA's newest advisory body, the Council replaced the AAS Alumni Division in 1969. It recommends to the President ways and means by which the Association can increase its support of the Arnold Air Society and AFROTC in general. Numbered among this year's members are four former National Commanders of the Society.



From left to right: Council Chairman, Thomas E. Cindric, Laurel, Md.; 2d Lt. Charles P. Azukas, Wright-Patterson AFB, Ohio; Capt. Fredric C. Lynch, Hq. USAF, Washington, D.C.; 2d Lt. J. Parker Owens, Maxwell AFB, Ala.; Gilbert E. Petrina,

Hershey, Pa.; 2d Lt. Glynn P. Sadler, Charleston AFB, S.C.; Maj. William L. Sparks, Randolph AFB, Tex.; and Council Consultant, Phillip G. Robinson, National Commander of the Arnold Air Society, Seattle, Wash.

An 'AFA News' Feature...

Christmas 1970—fifty-six tons of it—came by air and truck to the needy Navajo Indians in the Four Corners area of Utah, Colorado, Arizona, and New Mexico, after a campaign sparked by the Air Force Association members of Utah. It was the third straight year for . . .

UTAH AFA'S PROJECT NAVAJO

By Robert H. Bowman

Mr. Bowman is Deputy Chief of the Office of Information at Hq. Ogden Air Materiel Area (AFLC), at Hill AFB, Utah.

HILL AIR FORCE BASE, UTAH
AFIFTY-SIX-TON Christmas present, delivered by flying aluminum "reindeer" and diesel-powered red "sleighs," brought the spirit of Christmas in 1970 to Navajos on their 25,000-square-mile reservation, in the Four Corners area of Utah, Colorado, Arizona, and New Mexico.

"Project Navajo"—sponsored by the Utah Air Force Association—gathered more than 100,000 pounds of food and clothing for distribution to the needy Indians during the annual drive.

Two semitruck-trailers, donated by Whitfield Transportation, Inc., of El Paso, Tex., hauled 80,000 pounds of Christmas cargo to the northern half of the vast Navajo reservation.

The four-day journey to the northern half of the reservation began on December 17, 1970, when the two trucks left Salt Lake City loaded with goods collected in northern Utah.

Santa Claus rode aboard one of the trucks, to greet Navajo young-



Above, Santa is besieged by Indian youngsters clamoring for traditional Christmas candy canes. At right, Santa (Ogden, Utah, newsman Gordon Havenor) chats in Navajo with an Indian lady at St. Michael's Catholic Mission in Arizona.



sters who awaited his arrival at four delivery points.

Stops were made at Aneth Junction and the Church of Jesus Christ of Latter-Day Saints Indian Branch, both in Utah; Seventh-day Adventist Hospital in Monument Valley and the United Presbyterian facilities at Kayenta, both in Arizona.

All the material was distributed in time for Christmas.

An additional 32,000 pounds of food and clothing had been delivered to the southern half of the reservation the previous weekend. These goods were airlifted to Kirtland AFB, Albuquerque, N. M., aboard two C-124 Globemasters from the 945th Military Airlift Group (Reserve) at Hill AFB. From Albuquerque, the items were trucked by Whitfield to St. Michael's Mission, about 135 miles northwest.

The two semitrailers pulled into the mission courtyard just at sunset. Many Indians had been waiting since early morning.

Dark eyes watched as Santa climbed from the red truck, but no one stirred. Navajo children are taught they should not trust anyone with a beard, it was explained. But a few well-chosen words in Navajo from Santa and an offer of candy soon overcame their shyness, and the children swarmed around the jovial visitor.

A Sister carried one child across the courtyard to meet St. Nick. The boy, Leonard Devore, a student at the school for handicapped at the mission, has cerebral palsy. His thin legs hung limply in his braces and he was shivering. Sister Mary Jane

spoke for him: "He hopes that you brought him a coat. He's never had one of his own."

One Navajo woman who had waited since 8:00 a.m. told AFA members that she was hoping for food and clothing to feed her eleven children.

Answers to the wishes of the crippled youth and the mother and her hungry brood were there, among the scores of boxes of food and clothing that were unloaded and stored at the mission under the watchful eye of Utah AFA President Harry Cleveland. It was the third straight year for the Utah AFA's "Project Navajo."

The drive began slowly in early November and built up to a crescendo after Thanksgiving. School children in Weber, Salt Lake, and Davis Counties in Utah joined the Project Navajo crusade, along with housewives, local businessmen, AFA chapters, and Hill AFB personnel. Employees of the Boeing Co., Thiokol Chemical Corp., US Internal Revenue Service, Defense Depot Ogden, and others also joined in.

The first sizable contribution for the drive came from the Ogden Rescue Mission, when the Rev. Forrest L. Stinson, Superintendent, donated 4,000 pounds of used clothing. The emphasis of Project Navajo was on food. A letter to elementary and junior high school principals invited their schools to participate.

Youngsters went home and asked their mothers if they could bring a

can or two of food to school during the balance of the drive. Thus, Project Navajo was extended to the school level.

Frank Coppin, President of the Utah AFA's Golden Spike Chapter, organized a drive in Brigham City, about twenty miles north of Ogden. On one Saturday morning, he gathered 5,000 pounds of material, using Boy Scouts as door-to-door collectors. A Brigham City flour mill donated two tons of flour, which was matched by Mr. Coppin from Chapter funds.

Donated items were brought to Hill AFB for sorting, packing, and storage pending shipment.

To get the items to Hill AFB required an armada of trucks. Supplementing Air Force vehicles were the Barton and Ringsby truck lines and the Salt Lake Transfer Co., all based in Salt Lake City.

The carriers, arranged for by the Utah Chapter of the National Defense Transportation Association, picked up twice a week at collection points in four northern Utah counties.

AFA members and personnel of the nearby Clearfield Job Corps Center packed the goods, working on their own time.

Originally scheduled to use one aircraft, the project went so well that an additional C-124 was required to haul the goods to Arizona.

The first C-124 was decorated with Christmas scenes painted on both sides of the nose section. The murals depicted Christmas as the Navajos see it, with Indian braves in colorful costumes astride their mustangs, looking over a picturesque desert scene lighted by the Star of Bethlehem. The paintings were the handiwork of four Navajos from the Intermountain School in Brigham City—Randlet Kedah, Austin Desidero, Gilbert Reuben, and Harry Clay.

Summing up this year's project, Mr. Cleveland called it the most successful project that the Utah AFA has ever undertaken.

"At every distribution point, we felt the spirit of Christmas," Mr. Cleveland said. "The gifts were well received. It was success well beyond all expectations." ■



Tom Buller, past Secretary of the Utah AFA and one of the AFA members who went along on the Christmas mission to help offload C-124s at Kirtland AFB, N.M., talks it over person to person with Navajo youngsters in Arizona.

—Photos by
Sgt. James Fox, USAF

By Don Steele

AFA AFFAIRS EDITOR

The Utah AFA's Annual State Convention was held November 20-21, 1970, in the Salt Lake City Travelodge. The Convention opened with a Friday evening social. Then, on Saturday morning, delegates met to transact the unit's business and elect officers to lead the State Organization during 1971.

Glen Jensen of Salt Lake City was named to succeed Harry Cleveland as President. Also elected were: Lynn Summers, 1st Vice President; Raymond Cassell, 2d Vice President; Robert Walker, Secretary; Leon Barnes, Treasurer; and Les Richardson, Judge Advocate.

Jack Withers of Dayton, Ohio, a

THE UTAH STATE ORGANIZATION. . . cited for consistent and effective programming in support of the mission of AFA, most recently exemplified in its third annual "Project Navajo," a community-action program.

icates of Honor were presented to Mrs. Rosalee Mynatt and Mrs. Suzanne Pearson, both of the Rocky Mountain Chapter; the Bonneville Chapter of the American Red Cross; and AFA's Ogden Chapter for "outstanding service to the cause of human rights by virtue of taking positive action in behalf of Americans who are missing in action or held prisoner of war in Southeast Asia."

The Utah AFA's "Unit of the Year" plaque went to the Ogden Chapter. A. B. Draper, who supervised reconstruction of an F-4 Phantom jet for presentation to the Air Force Academy by the Utah AFA, was named the State AFA's "Man of the Year."

Special guests included AFA National Secretary Nathan Mazer and Jack Price, Vice President for AFA's Rocky Mountain Region.

The Utah AFA's third annual "Project Navajo" is covered in a story on page 76 of this issue. This highly effective and successful community-action program received national TV coverage and helped obtain community cooperation for all Utah AFA programs. In recognition of the unit's efforts, we are happy to name the Utah State Organization as AFA's "Unit of the Month" for March.

* * *

During the latter part of 1970, AFA's San Francisco Chapter co-



Ogden Chapter President James Brown, left, accepts Utah AFA's "Unit of the Year" plaque from State President H. Cleveland.



A recent San Francisco Chapter luncheon was attended by, from left, R. E. Mayer, Navy League; Admiral Moorer, Chairman, JCS; Sam Stewart, San Francisco Chamber of Commerce; R. C. Ham and Arthur Trost, of the San Francisco Army Association and AFA, respectively.

member of AFA's Board of Directors, was the guest speaker at the Awards Banquet. In his address, Mr. Withers said, "Despite the fact that [the United States] is faced with the most powerful enemy it has ever had, it is now incredibly engaged in disarming." He urged the Administration to continue vigorous development of the B-1 bomber program, expedite the Airborne Warning and Control System, furnish the US Navy with faster and quieter nuclear submarines, and expedite development of the ABM.

During the program, AFA Certifi-

Utah AFA Exceptional Achievement plaques went to: the Rocky Mountain Chapter, Darlene Galbraith, and Edward Sparr.

Award of Merit plaques went to Thomas Miller, Frank Coppin, Robert Foster, Verl Williams, James Brown, Ray Dunn, William Fryer, Larry Bowden, Capt. Bruce Kotchey, Douglas Green, and Raymond Cassell.

Citations of Merit were awarded to Martin Conover, Trenna Malone, Gloria Denner, Larry Barton, Joseph Eckman, "Ace" Alled, James Della Silva, and Donna Williamson.

sponsored two excellent luncheon programs. The first, held in the Grand Ballroom of the Fairmont Hotel, attracted more than 600 people and was dedicated to those who are being held prisoner of war or who are missing in action in Vietnam.

Adm. Thomas H. Moorer, USN, Chairman of the Joint Chiefs of Staff, was the guest of honor and speaker. Cosponsoring organizations and their presidents are: Arthur W. Trost, San Francisco Chapter, AFA; Richard C. Ham, San Francisco Chapter, Association of The United States Army;

Air Force Association

SILVER ANNIVERSARY MEDALS



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From Kitty Hawk to Tranquility Base, Americans of courage, dedication and foresight have built and maintained our country's preeminent role in mankind's conquest of flight.

The Wright brothers and Billy Mitchell; Doolittle, Spaatz, and Arnold, Glenn, White, and Armstrong—names representing thousands of American airmen whose efforts and achievements have helped bring honor and freedom to our skies. In this crucial quarter century past, the Air Force Association has stood with the vanguard of Americans who nurture, protect, and support the continued growth of United States aerospace power.

Twenty-five years ago, a group of air-war veterans, responding to General "Hap" Arnold's call for an "independent civilian organization" to act as spokesman for airpower, chartered the Air Force Association "to educate its own members and the public at large in the proper development of air power."

AFA's independent character has been emphasized by its adherence to civilian leadership. Throughout its growth to a membership of 105,000 and some 240 chapters, AFA has served its country well.

At its first national convention in 1947, AFA's president, General Jimmy Doolittle, could proudly say: "No organization did more to achieve a co-equal and autonomous Air Force."

In his keynote address at the same occasion, General Eisenhower observed: "... this group ... will devote itself to our defense needs ... as it keeps always in view the

potential usefulness of the airplane in bringing the world closer together in purpose as well as in time ..."

AFA has demonstrated clearly that private citizens can work together effectively in the national interest. In the 50's, not forgetting the speed with which the airplane brings progress and change, AFA was again among the leading spokesmen for the development of America's aerospace program and in 1959, Life magazine hailed the AFA sponsored World Congress of Flight as the "world's greatest air-space show."

The results of AFA activity in the fields of military pay and living conditions, prisoner of war treatment, and civilian application of Air Force vocational training techniques speak for themselves.

The foresight of General Arnold and those who brought AFA through those 25 years has withstood the test of time. Silver Anniversary President Hardy summed up AFA's past contributions and its future potential when he said:

"Because our nation has been strong, we have been able to deter the general war that could destroy civilization. Because we have been strong, there is at least a measure of hope for rational arms control agreements. Because we have been strong, we have a society, admittedly imperfect and in need of many reforms, but all the same, intact. To help maintain the strength required to protect that society is the unashamed purpose of the Air Force Association now and in the future."

A limited edition commemorative medal has been commissioned to honor the Silver Anniversary of the Air Force Association and its dedication to American achievement in the aerospace field.

These serially numbered, deep relief medals and medallions will be struck in solid palladium* and in sterling silver by The International Mint whose master engravers created the personal presentation medals for each Apollo flight crew.

The obverse design of the heavy gauge, jeweler's antique finish medal depicts the Air Force Association wings as interpreted by the well-known medallist designer, Donald Struhar, whose work includes the International Mint "History of America's Men in Space" and commemorative art for the United States Air Force Academy.

The finely detailed reverse design bearing the legend "Power for Freedom", recreates the World Congress of Flight symbol over an arc of 25 stars.

To insure the limited edition status of this medallion tribute to the Air Force Association, The International Mint will restrict the serially numbered commemorative issues to the following mintages:

SOLID PALLADIUM*	
2½" Medallion	25
39mm Medal	250

SOLID STERLING SILVER	
2½" Medallion	2,500
29mm Medal	10,000

Those wishing to subscribe to all four issues or to both sizes in either palladium or sterling will receive matched serially numbered sets. These sets and the 2½" medallion will be housed in handsome desk-top collector displays. Subscribers to the 39mm medals will receive a specially designed Clear-Vue holder which allows display of both sides of the medal without requiring its removal.

Subscription details are included in the limited edition subscription form below. Since applications will be handled in strict rotation, may we suggest you act now so as to ensure acquisition of this unique medallion tribute to the Air Force Association.

* A rare, lustrous, silver-white metal approximately equivalent in value to 24K Gold.

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AFA News

Robert E. Mayer, San Francisco Council, Navy League of the United States; and **Sam Stewart**, Greater San Francisco Chamber of Commerce.

The second luncheon was cosponsored with the San Francisco Chapter of the **National Aeronautic Association**.

Hart, Charles F. West, Anthony Stadlman, and Walter J. Addems.

* * *

The observance of the **Sixty-seventh Anniversary of Powered Flight** on December 17 at **Kitty Hawk, N. C.**—a one-day program arranged by the **Air Force Association** and cosponsored with **The First Flight Society**, the **National Aeronautic Association**, and the **National Park Service**—began with **First Flight Ceremonies** at the **Wright Memorial Visitors Center** and ended with the **Wright Memorial Luncheon** in the **John Yancey Motor Hotel**.

The **First Flight Ceremonies** fea-

Ranger, Cape Hatteras National Seashore. State Senator **George M. Wood**, 1st Vice President of **The First Flight Society**, presided, and the memorial prayer was delivered by the **Rev. Hank Wilkinson**, Pastor of the **Kitty Hawk United Methodist Church**. The **North-eastern High School Band** of **Elizabeth City**, under the direction of **Scott Callaway**, entertained the audience with musical selections.

Memorial wreaths were placed at the **First Flight Marker** by descendants of witnesses of the first flight. These were placed in behalf of the **City of Dayton, Ohio; Dare County,**



At the recent **Kitty Hawk, N. C., Wright Memorial Luncheon**, participants included, from the left, **Robert J. Schissell**, **Lt. Gen. Eugene B. LeBailly**, and **S. Wade Marr**.



Top AF Recruiter in Sector C receives **Georgia AFA Certificate of Merit**. From left, **TSgt. W. F. Green**, **State Council Member R. Herbison**, and **D. L. Devlin**, **State Vice President**.

AFA Chicopee Chapter President **A. Trushaw**, left, with **CAP rocket-meet winners** (from left) **Cadets Ailler**, **Goodwin**, **Stahlelski**—third, first, and second place, respectively.



AFA President George Hardy, during a visit to **Indiana's Butler University** to address the **Arnold Air Society**, took time to pin **Angel Flight Wings** on his goddaughter, **Miss Linda Cook**.



tion to observe the **Sixty-seventh Anniversary of Powered Flight** and to honor the local members of the **Early Birds**, an organization of aviation pioneers.

Walter Steiner, an American Airlines senior pilot, gave an interesting talk entitled "Up Front with the 747." Mr. Steiner was introduced by **Tom Barbour**, a Past President of the Chapter.

Members of the **Early Birds** who attended are **Olive Rosto**, **Dana C. de**

tured remarks by **John Worth**, a member of the **National Aeronautic Association's Executive Committee**; **Col. William Douthwaite**, Chief of Staff, Headquarters Command, USAF, representing the Commander, **Maj. Gen. Nils O. Ohman**; and **Robert J. Schissell**, President of the **Nation's Capital Chapter** of the **Air Force Association**.

Remarks of welcome were given by the **Hon. W. S. White**, Chairman of the **Dare County Board of Commissioners**, and **R. D. Cheesman**, Chief

N. C.; The First Flight Society; National Aeronautic Association; North Carolina Aero Club; Society of Daedalians, Kitty Hawk Chapter; and AFA's Wright Memorial Chapter, of **Dayton, Ohio**.

The ceremonies closed with airborne tributes by **Howard Bennett** of **Lumberton, N. C.**, in his home-built sports plane; four **F-102 Delta Daggers** of the **169th Fighter Group**, **South Carolina Air National Guard**, led by the group's Commander, **Col. Robert**

AFA NEWS

Johnson; and two C-130 Hercules from the Coast Guard Air Station at Elizabeth City, N. C.

Lt. Gen. E. B. LeBailly, USAF, Chairman of the Inter-American Defense Board, and the principal speaker at the Wright Memorial Luncheon, traced the history of the airplane from its earliest beginnings to the present, in an address he said could be entitled "The Toy That Revolutionized the Race of Man."

Lorimer Midgett, President of The First Flight Society, was Toastmaster, and remarks of welcome were given by **S. Wade Marr**, a director and a former President of The First Flight Society. The **Rev. Kenneth L. Whitney**, Rector of the **St. Andrews-by-the-Sea Episcopal Church**, gave the invocation.

During the program, **William Wooten**, Eastern Airlines Regional Manager for Public Relations, presented **Paul Garber**, Historian Emeritus of the National Air and Space Museum, the



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original telegraph key used by **A. W. Drinkwater** on December 17, 1903, to relay to the world stories of the Wright brothers' first flight.

Also a part of the program was the unveiling of portraits of the two newest members of the **First Flight Shrine**—**Dr. Igor I. Sikorsky** and the late **Wiley Post**. The First Flight Shrine was established by The First Flight Society to honor those who have accomplished notable "firsts" in the field of flight. Among those honored earlier are **Orville and Wilbur Wright**, **Amelia**

Dare County News and Tourist Bureau; **Headquarters Command, USAF**, **Bolling AFB**; and the **Office of Information**, Office of the Secretary of the Air Force.

* * *

COMING EVENTS . . . Iron Gate Chapter's Eighth Annual Air Force Salute, New York City's Americana Hotel, March 26 . . . **California AFA Convention**, Pasadena, March 26-28 . . . **Arnold Air Society National Conclave**, Hollywood Beach, Fla., April 14-18 . . . **Florida AFA Convention**,

Brig. Gen. J. Gonge, Commander, 63d MAW, accepts \$1,000 check for Norton AFB Welfare Fund from Maj. Gen. D. Coupland, USAF (Ret.), General Chairman of San Bernardino Chapter's Second Annual AFA Charity Golf Tournament.



Earhart, **Charles A. Lindbergh**, Col. "**Chuck**" **Yeager**, **Jacqueline Cochran**, **James H. Doolittle**, **Glenn H. Curtiss**, and the crew of **Apollo-11**. The portraits of this year's honorees were unveiled by **Mrs. Lee Manch**, widow of Col. Jack Manch, one of the Doolittle Tokyo Raiders, and by **Col. Joseph Hughes**, USA (Ret.), representing the donor of the portraits, **John Yancey, Jr.**

Special guests included **Brig. Mayor E. A. Martinez**, Chief of the Argentine Delegation to the Inter-American Defense Board; **Brig. Hugo Miranda**, a member of the Brazilian Delegation to the Board; **Mrs. Anesia Pinheiro Machado** of Brazil, who holds the oldest active flying license issued to a female (assigned in 1922); **Rear Adm. Mayo A. Haddon**, USN, Commander, Fleet Air Wings, Atlantic; **Col. Austin Lemon**, Director of Information, Headquarters Command, USAF; **Capt. J. J. Fehrenbacher**, USCG, Commander, Coast Guard Air Base, Elizabeth City, N. C.; **Capt. Fred T. Merritt**, USCG, Commander, Coast Guard Air Station, Elizabeth City, N. C.; **Carlton Harry**, President of AFA's **Tidewater Chapter**; **David Scott** of the Experimental Aircraft Association; **Dr. Mervin K. Strickler, Jr.**, Special Assistant for Aviation Education, FAA; and **Col. A. B. McMullen**, a member of the National Advisory Board of The First Flight Society.

Deserving of special recognition for efforts in behalf of this annual program are: **Aycock Brown**, Manager,



Spokane Chapter President D. A. Levitch, right, presents citation to Col. J. Swayze, for work with U. of Montana AFOTC.

Orlando, April 30-May 1 . . . **Alaska AFA Convention**, Anchorage, May 8 . . . **Washington AFA Convention**, Seattle, May 15 . . . **San Bernardino Chapter's Third Annual AFA Charity Golf Tournament**, March AFB and Norton AFB, May 21-22 . . . AFA's annual dinner honoring the **Outstanding Squadron** at the Air Force Academy, Colorado Springs's Broadmoor Hotel, June 5 . . . **Texas AFA Convention**, Fort Worth, June 25-27 . . . **AFA's Twenty-fifth Anniversary National Convention and Aerospace Development Briefings**, Washington, D. C., September 20-23. ■

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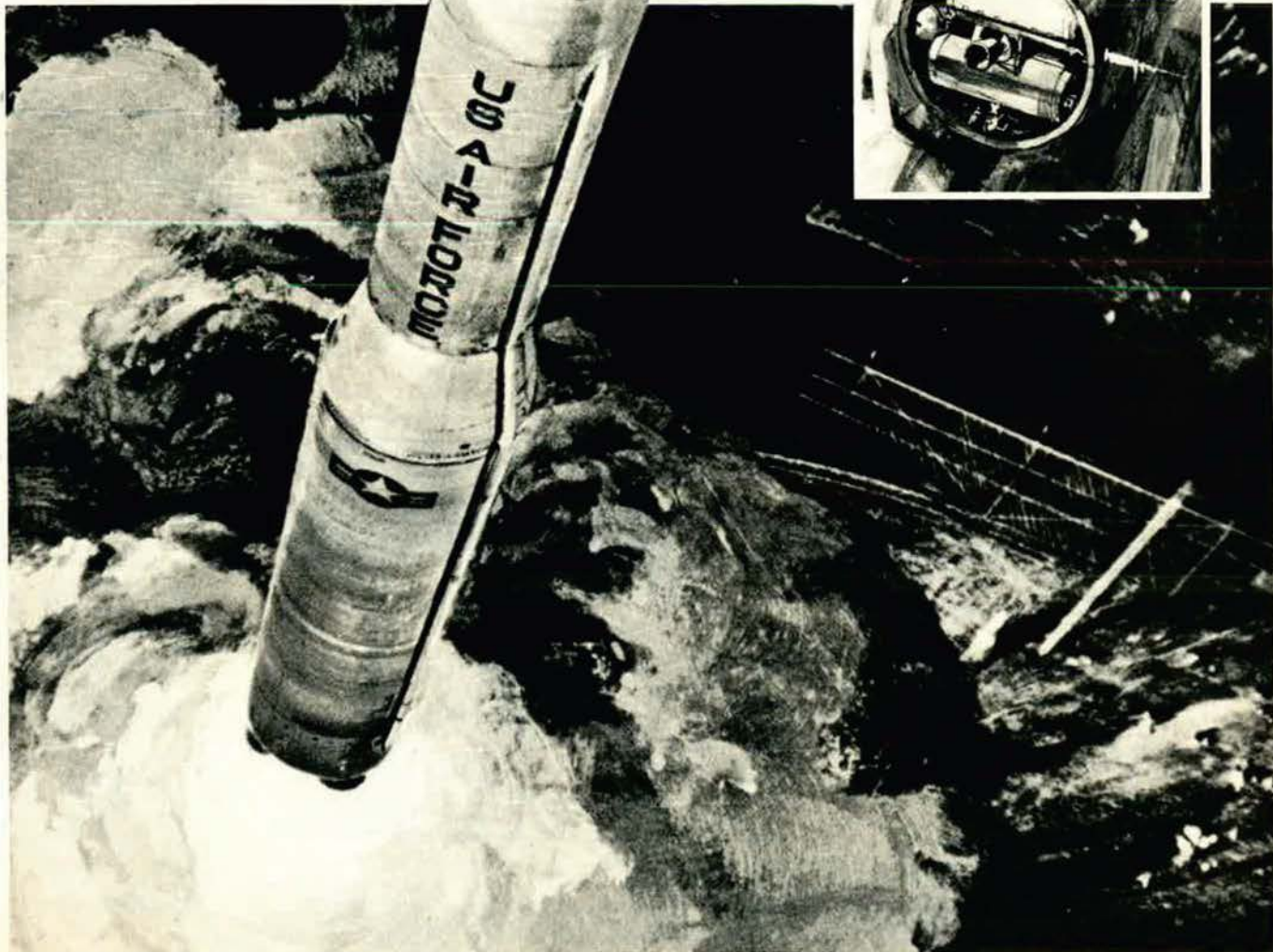
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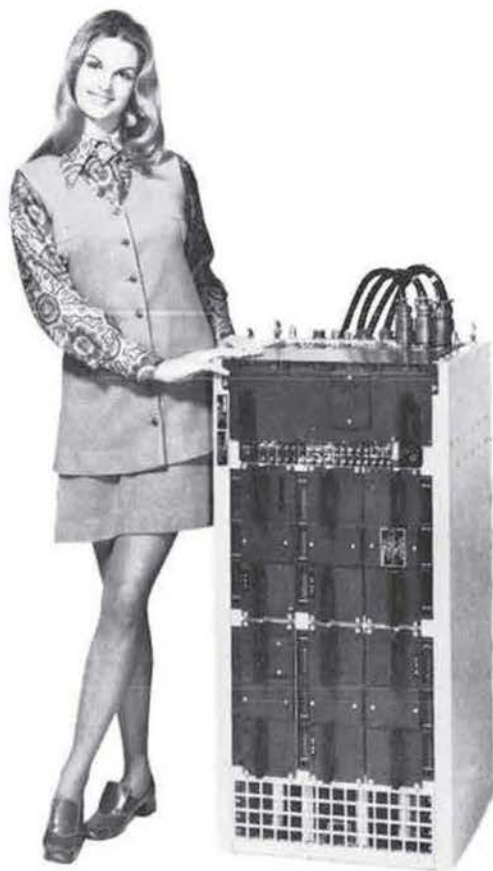
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