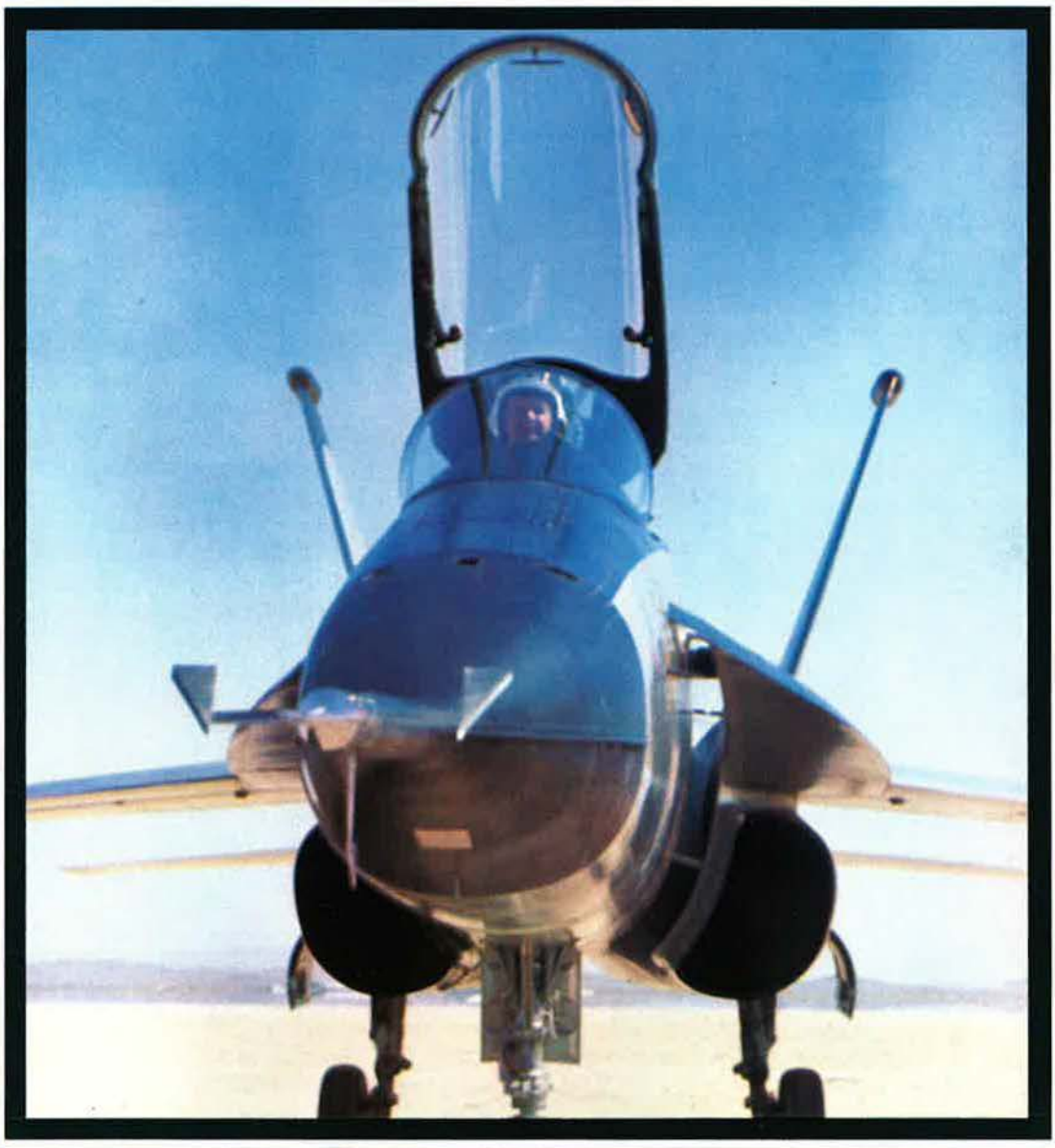
JUNE 1974 / $1

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

NORTHROP'S YF-17



READY TO JOIN THE YF-16 IN FLYOFF

When General Dynamics developed its concept of a low-cost, lightweight fighter under Air Force contract, it drew upon Garrett's 40 years of experience in manufacturing low-cost, high-performance flight systems.

Now in flight test and evaluation, the YF-16 uses Garrett's high-torque leading edge maneuvering flap actuating system and environmental control system.

The actuation system Garrett has designed for the YF-16 is the latest in a long series built for military and commercial aircraft. More than 4,000,000 units have been manufactured and delivered. The YF-16 system provides maximum power in minimum space.

Like the actuation system, the YF-16's Garrett environmental control system is low-cost. It's basically off-the-shelf equipment—and it's reliable. Garrett has built more ECS units than anybody in the world—including the first pressurization system ever used on a production aircraft, the B-29.

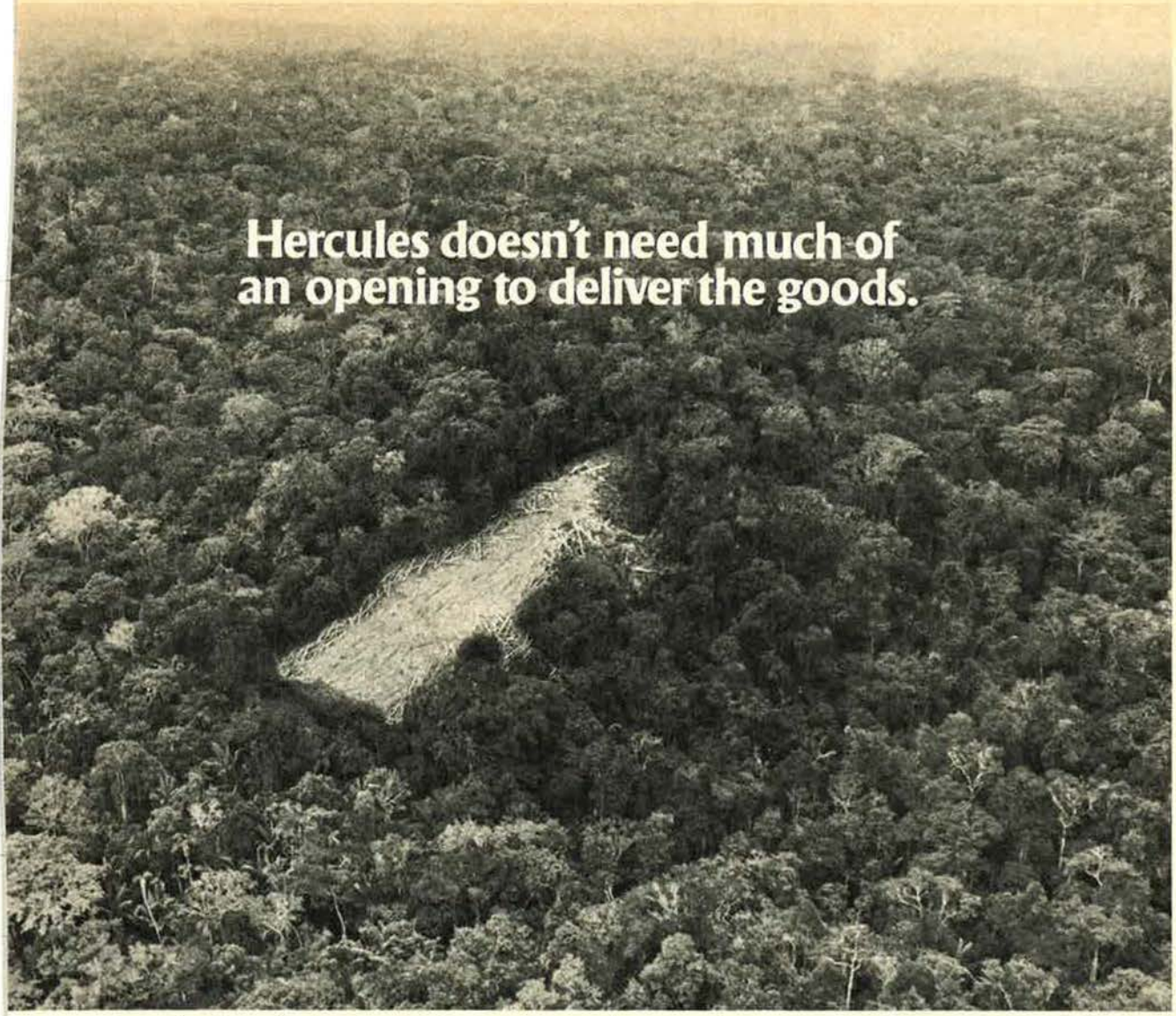
When you're looking into flight systems, look into Garrett. For quality and reliability at low cost.

The Garrett Corporation One of The Signal Companies

High performance. Lightweight. Low cost. We're helping the YF-16 compete.

GARRETT FLIGHT SYSTEMS

Right for the times



Hercules is the plane designed to go places other planes aren't expected to go and to do things other planes can't.

A big commercial cargo jet cannot be expected to land on runways as short as 2100 feet. Hercules can and does.

Other planes large enough to carry 50,000 lbs. of cargo need an airport, not a jungle clearing, to land in. Hercules needs only an opening. It makes little difference whether the terrain is jungle, sand, dirt or ice.

Of course, most places without airports are also without ground-handling equipment. So you can hardly expect a plane to unload any outsized cargo. Unless the plane is Hercules. Through its huge rear doors (9'x10') and down its rear ramp, jeeps, bulldozers and tractors drive on and off with the help of nothing more than a driver.

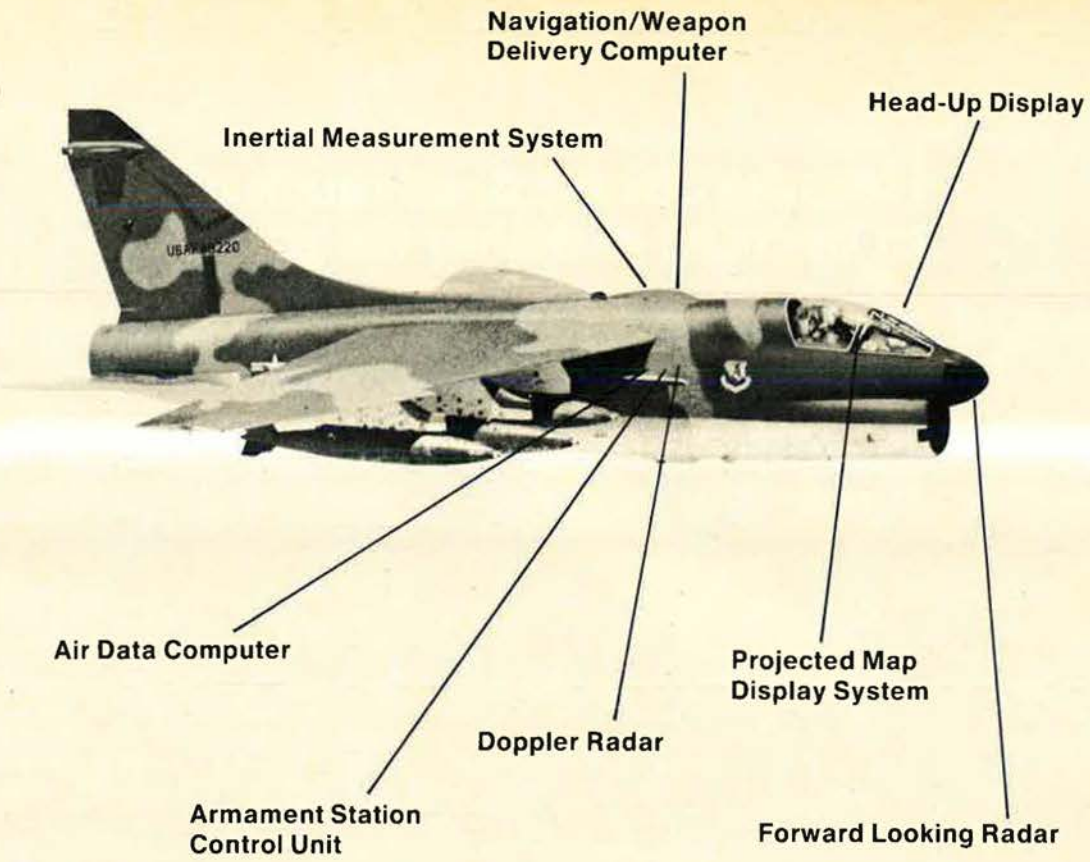
Hercules' ability to land and unload where other planes can't is just part of the reason 34 nations have purchased this timeless machine.

In places you wouldn't expect to find a plane, you can expect to find Hercules delivering the goods.

And isn't that what an airlifter's supposed to do?

Lockheed-Georgia

A Division of Lockheed Aircraft Corporation, Marietta, Georgia



The whole is greater than the sum of its parts.

This simple statement is the best way to describe today's A-7. Its advanced electronic systems are so skillfully integrated that they out-perform each of their individual capabilities. Together they make the A-7 the most versatile and effective close air support and interdiction aircraft in the world.

Vought Systems Division is the first aircraft manufacturer to deliver an operational navigation and weapons delivery system that equals or betters performance and accuracy guarantees established before the program was started.

In all, more than 4½ million man hours were invested in the successful development of this system. Thousands of flight test hours were flown. Over te thousand pieces of ordnance were dropped. quarter of a million 20 MM rounds were fired. All this work was conducted under rigorous tes conditions.

As a result, today's A-7 delivers up to 15,000 pound of payload with better than 10-mil accuracy. destroys hard targets in one-third the sorties require by other systems.

Other aircraft today contain many of the same com ponents found in the A-7. But the A-7 is the onl weapons system in operation with demonstrate proof that its integrated whole is greater than th sum of its component parts.

VOUGHT SYSTEMS DIVISION
LTV AEROSPACE CORPORATION

AIR FORCE
LISHED BY THE AIR FORCE ASSOCIATION MAGAZINE

VOLUME 57, NUMBER 6

JUNE 1974

HIS MONTH

THIS MONTH'S COVER . . .

Northrop's YF-17, rolled out on April 4, will be flight-tested in competition with General Dynamics' YF-16. The competition may result in the selection of either the YF-16 or the YF-17 as the Air Combat Fighter (see p. 34).

THE DEPARTMENTS

BPA Circulation audited by Business Publication Audit

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A GUEST EDITORIAL

WHAT'S RIGHT WITH DEFENSE

BY SEN. WILLIAM PROXMIRE

On April 25 and 29, Sen. William Proxmire (D-Wis.), one of the most persistent critics of defense management, delivered two speeches on the Senate floor, praising the Department of Defense. In the first, which dealt with the development of US strategic power, the Senator observed that ". . . no other department of government can show as much improvement in basic capability nor claim such a dramatic increase in effectiveness." The second speech, which appears in part below, described management innovations of the Office, Secretary of Defense, and of the three military departments. The following excerpts from that speech have been selected for their special interest to our readers:

On Thursday, in my series of speeches on what is right with the federal government, I discussed how the Department of Defense has made great strides in improving the strategic capability of the United States. The addition of the Minuteman and Poseidon missile systems to our nuclear arsenal have provided us with the world's most devastating military force. Improvements in other high technological areas are producing similar results.

Today, however, there is another issue of military improvement and excellence I would like to address, and that is the question of management innovation in the Defense Department. Judging by the past fifteen years, the Department of Defense has faced and solved more management problems with greater success than any business in the world. I have criticized the Defense Department before, and I will do so again and vigorously. But in all fairness, they have done well in many respects and deserve credit for it.

It is reassuring to look back at the enormous problems the Department of Defense has solved by wise management and sound decision-making, especially since the mood of the country seems to be pessimistic and critical of all government bureaucracies. A review of past and present defense management programs will quickly show that we are making progress.

In the late years of the Eisenhower "New Look," the emphasis was on strategic nuclear weapons, and little attention was given to general-purpose forces. The lingering effects of the massive retaliation doctrine had a detrimental impact on the preparedness of the Army and Navy. . . .

In 1957, the Air Force concentrated on the strategic retaliation role and slighted tactical roles and missions.

The "100" series of supersonic aircraft was just coming into the inventory. Now the improved F-4s supply greatly enhanced capability, including improved ordnance loads and more versatility.

Strategic airlift was in its infancy in 1957. All aircraft were propeller driven. The C-130 was just becoming available. The force today Is composed of all-jet aircr including the efficient C-141—a big cargo-carrying pla —and the special-purpose C-5A, which can deliver o size equipment anywhere in the world. We have twice many as the Air Force said in their report that th needed. We have a more responsive force and great lift capacity than any similar unit in the world. This why I say that we have the most mobile force in t world, as well as one with an amazing and tremendous improved and increased firepower.

One of the most revolutionary developments has be the emergence of the "smart bombs," which enable single weapon to destroy targets previously immune carpet bombing. Interdiction capability with the A-7 a F-111 is significantly better than in prior years.

The dramatic improvement in the force structure the United States can be attributed to the new ma agement techniques now in existence. To begin wi Congress plays a much more active role in authorizi and appropriating funds and in overseeing programs.

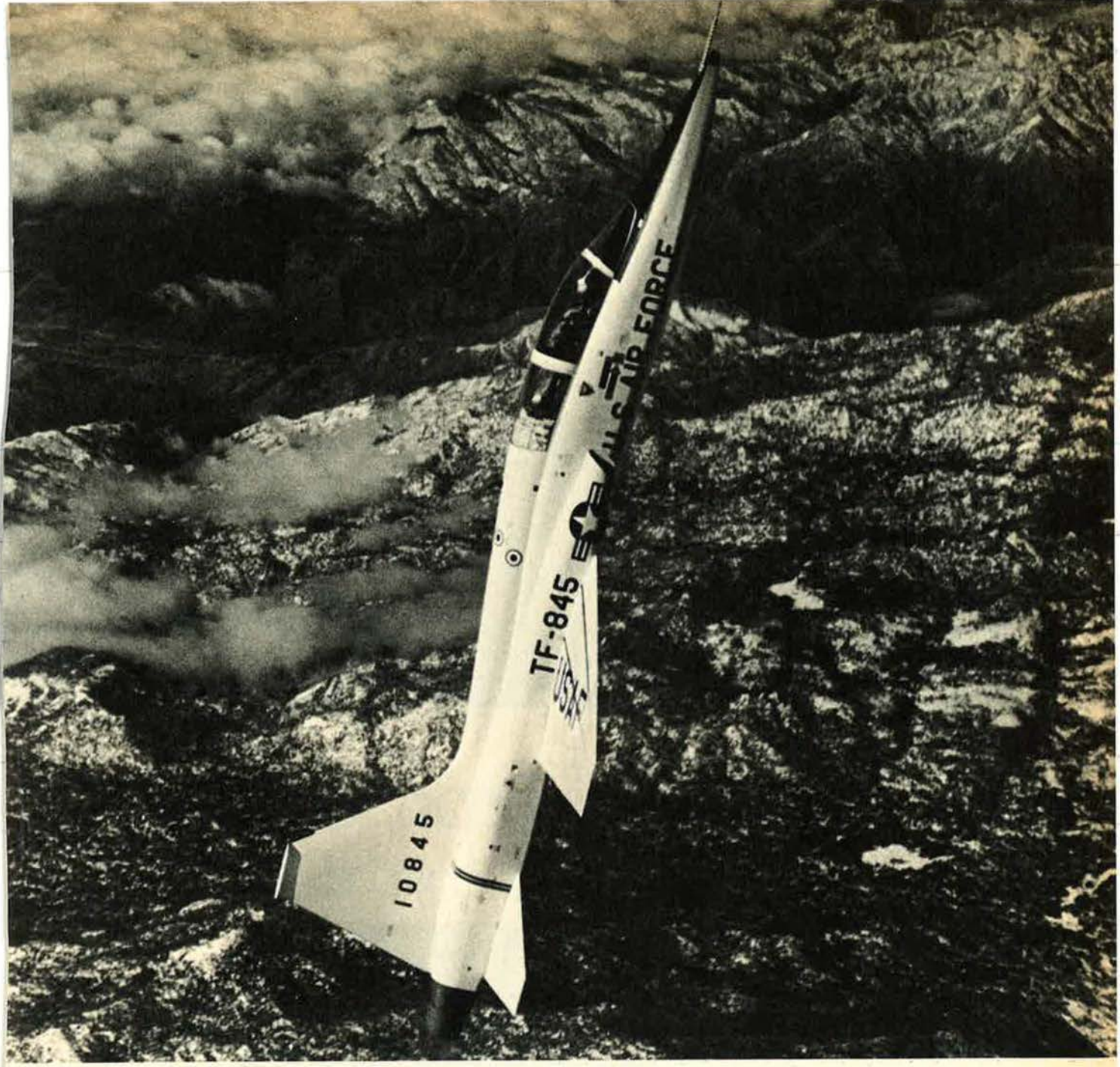
In the late 1950s, the individual services prepared th own budgets in isolation from the others and with lit integration of national policy or priorities. Total progra costs were not estimated with regularity or precisio interservice rivalry often resulted in unbalanced natio programs.

A few short years later, vast improvements had be made by increasing the authority of the Secretary Defense in the formative stages of budget allocation the services and by an improvement in legislative ov sight. A planning-programming-budgeting cycle has be established to assist the Secretary and the servic Roles and missions have been sorted out so that harmful effects of interservice rivalry have been mi mized. The use of systems analysis has provided a n tool for making rational judgments among alt natives. . . .

Being a member of the US armed forces is no long a second-class citizen role. Compensation for the low and middle ranks has been raised to be comparable w civilian employment. The conditions of military life ha improved year by year. . . .

In short, the Defense Department has provided c country with a unique, broad spectrum of military cap bility able to defend us from attack and operate effective throughout the world if need be. This could not ha been accomplished without extraordinary manageme innovations. . . .

I am convinced, as the head of the Air Force has sa that we have the most powerful Air Force in the wor without any question; and I think we have the mo powerful Navy, without any question. We have an Ar that has the mobility and the firepower to meet the ene on equal terms.



Scholar Ship.

J.S. Air Force student pilots fly faster than sound for the irst time in the T-38. More than 24,000 pilots to date. Northrop built 1,189 of these supersonic teaching nachines. And set important records doing it.

All T-38's were built and delivered on time. They have he best safety record of any super- onic jet. And they've earned excel- ent marks for reliability and ease of naintenance.

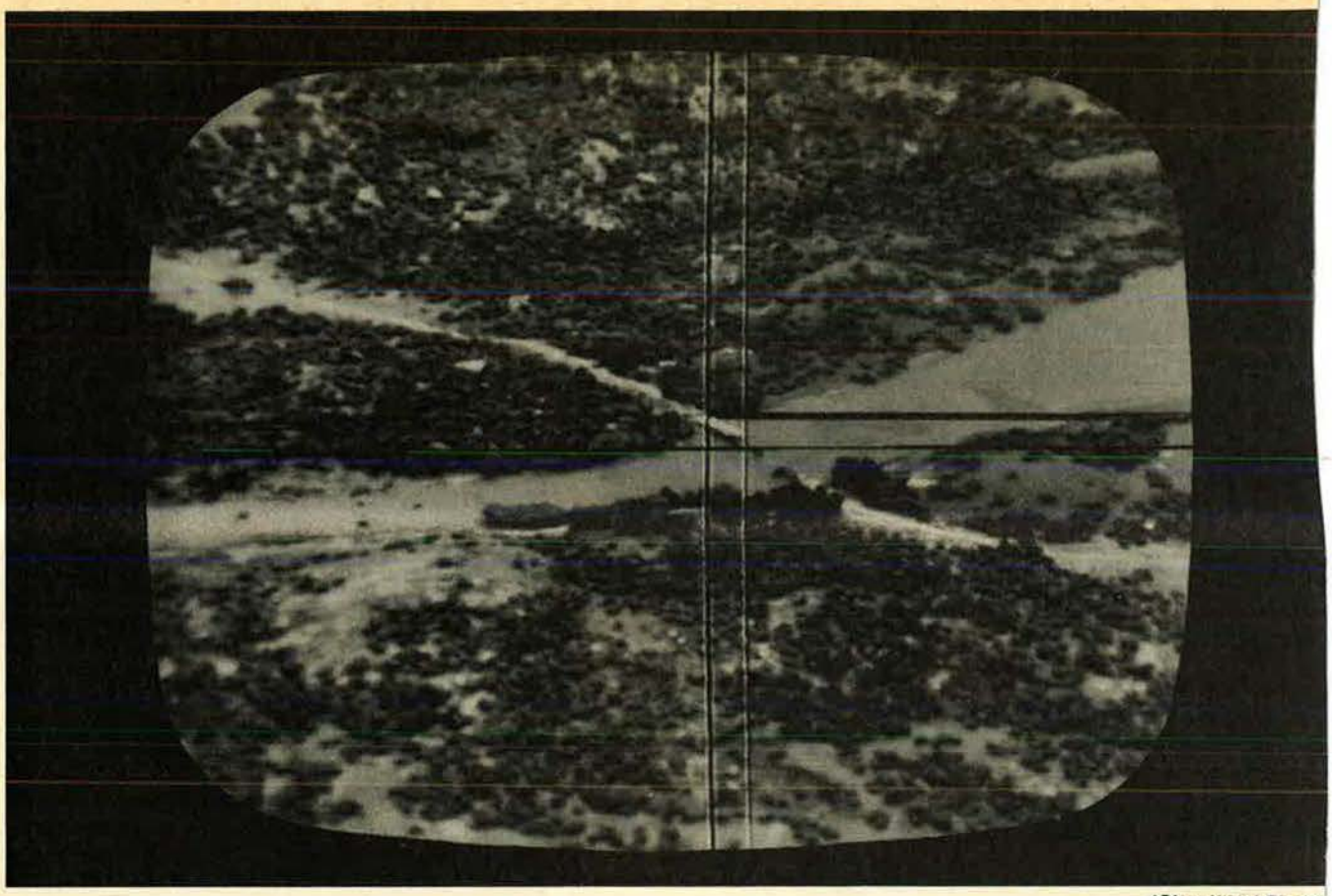
Best of all, every T-38 was delivered t or below the promised cost.

We delivered a better airplane for ess cost because we did our home- vork. From first step to last we applied technology as a creative tool. To simplify. To improve performance. To shrink costs.

Airplanes that make sense. The F-5. The F-5E International Fighter and two-seat F-5F we're building now. And the YF-17 being used by the U.S. Air Force to demonstrate advanced technology. The Northrop family of fighters — pound for pound, the best lightweight fighters in the world.

Northrop Corp., 1800 Century Park E., Los Angeles, Calif. 90067.

NORTHROP



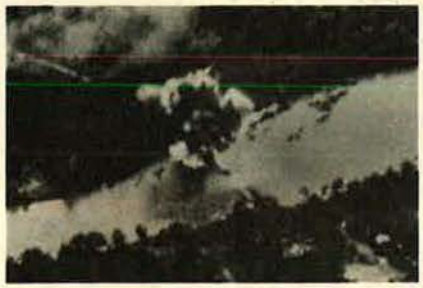
(Simulated Photo

If the pilot can see it... HOBOS can hit it.

HOBOS is a low-cost, proven, modular homing bomb system that readily converts conventional bombs into guided weapons. Airmen call them "smart bombs."

The Rockwell International Missile Systems Division (MSD) designed and is producing HOBOS to meet the Air Force requirement for a system that provides great accuracy while reducing crew hazard from enemy defenses.

Here's how the HOBOS (HOming BOmb System) works. The pilot sees the



target on a cockpit TV monitor, locks in the TV guidance system, releases the weapon, and then begins his escape maneuver.

For day and night operations, an infrared guidance system has been developed that senses heat-emitting sources and homes in on them.

HOBOS is doing the job. Airmen say, "They hit nearly anything we aim at."

MSD, responding to a need for advanced weapons, is engaged in the design, development and production of a variety of highly accurate stand-off weapon systems.

Missile Systems Division
Rockwell International

Airmail

Misspelled Name

Gentlemen: I am very sensitive to misspelled names because my own is so often abused. Perhaps it was overreaction, but each time, in Edgar Ulsamer's otherwise faultless article, "Adjusting Triad to Mounting Soviet Threats," April '74, the name of Col. (Brig. Gen. Selectee) John W. Hepfer was misspelled, it caused me to flinch with indignation.

As SAMSO Deputy for Minuteman, Colonel Hepfer manages one of the most important and complex weapon system programs in the DoD. It is incumbent upon you to ensure that all who work with and for him, in government and industry, and your many readers, do not perpetuate the blunder. A special effort on your part to rectify the error will be sincerely appreciated.

Colonel Hepfer has a unique name and his many friends and acquaintances (they are legion!) will attest that he is indeed a unique officer and gentleman. All of us rejoice in his promotion, wish him Godspeed in his new responsibility, and look forward to seeing your correction.

Col. Leonard R. Sugerman
Chief, Plans & Requirements Office
Hq. Air Force Special Weapons Center (AFSC)
Kirtland AFB, N. M.

• *It is ironic that an editorial staff that copes monthly with Loosbrock, Ulsamer, Witze, and Frisbee should come a cropper on Hepfer. Our apologies to Colonel Hepfer and our thanks to Reader Sugerman.*—THE EDITORS

Counterforce Debate

Gentlemen: The current debate on a proposed "change" to a counterforce strategy, when thought of in practical terms of strategic forces composition, is concerned with improving our ICBM forces to hit superhardened Soviet targets; namely, ICBM silos and hardened command centers. Other targets, such as bomber bases, antiair defenses, and "soft" command centers, need no improvements in force structure to be successfully attacked.

I have no way of knowing the number of truly hardened Soviet command centers, but it seems as if our Titan II force may be adequate to deal with this problem. The question then becomes very limited—is there any scenario which requires a counterforce structure for an adequate retaliatory response on our part to a Soviet attack? As it is doubtful that we would ever use such a force for a first strike, we must consider money spent on counterforce as wasted if we can postulate no such scenario.

If the Russians launch a successful counterforce attack, then our ICBMs will be largely destroyed, and our counterforce attack against presumably withheld SS-11 and SS-13 types would have to be carried out with weapons we already have —our strategic bomber forces.

If the Russian attack is not so successful, we would have sufficient ICBMs left that destruction of a large number of Soviet ICBMs in retaliation would not be required to maintain a favorable postattack force structure. We could, therefore, *effectively* retaliate against other *military* targets, such as given at the beginning of this letter, and perhaps including tactical forces as well. Again, our bomber forces could be used to attack remaining ICBMs, if desired. It is, therefore, obvious that our retaliatory options against a purely counterforce Soviet strike are *not* limited to a countercity attack with our present strategic force structure, as those advocates of developing a new ICBM hard-target capability would have us believe.

If we do not need the high accuracy of a fixed-site ICBM force for counterforce attack, our best option would, therefore, seem to be conversion to a mobile ICBM force as soon as possible, and the essentially complete *abandonment* of silo-based ICBMs. Any present or future Soviet counterforce weapons would thereby be deprived of targets, and the integrity of our strategic forces would not be affected by them. Also avoided would be risk of either side, threatened with a counterforce attack, adopting a launch-on-warning posture for its ICBM force, which would in turn increase the risk of accidental war.

Otto J. N. Kunst, M.D.
Coconut Grove, Fla.

• *Dr. Kunst's comments on the counterforce issue represent a considerably different view from that expressed in recent issues of* AIR FORCE *Magazine. We believe that an improved US counterforce capability against hard targets is essential in the near future in order to maintain a parity of capabilities that is perceived by both friends and potential enemies, and to deter a limited counterforce attack on US land-based missiles. We welcome further comments, either pro or con, on what is undoubtedly the most important single defense issue of the day.*—THE EDITORS

Sharing the Knowledge

Gentlemen: I have read with interest the article in the March '74 AIR FORCE Magazine on the 64th FWS, "Teaching Tactics in TAC's 'MiGs.'" As usual, Capt. Don Carson has provided an excellent article on what is being accomplished by the USAF to train its pilots in the art of air combat maneuvering.

Being familiar with the philosophy and capabilities of the 64th FWS, I consider them a very welcome addition to the USAF dissimilar ACT community. However, near the end of the article, Don mentioned "Many pilots feel there is a need for carrying the program a step further. The current program offers a great degree of realism, but lacks the coordination and complexity of a large air battle." In the next paragraph, he stated: "Air battles with sixteen or more aircraft would add the realism of cluttered radio frequencies, multiple threats, mutual support, and the need for strict flight discipline."

I wish to take this opportunity to mention that Aerospace Defense Command (ADC) realized this problem many years ago and did something about it. In the summer of 1968, we established a multiaircraft dissimilar ACT program called "Col-

Airmail

lege Dart." I know a lot of fellow fighter pilots, including Don, are aware of ADC's dissimilar ACT program conducted at the Air Defense Weapons Center (ADWC), Tyndall AFB, Fla.

For those who are not familiar with College Dart, I will very briefly say that ADC, USN, USMC, and some TAC crews participate by practicing intercepting and escorting both strike forces and slower large aircraft such as the Airborne Warning and Control System aircraft (AWACS). On some missions, as many as sixteen aircraft are involved, and the learning curve for all those involved is tremendously high. ADC receives many complimentary critiques similar to the one mentioned in the article; *i.e.,* "This is the best flight training I have ever received."

I guess what I'm trying to say is a wealth of knowledge exists, not only at the ADWC, but throughout the entire US fighter community. I believe the time has come, finally, when this knowledge will be consolidated and used not just to train ADC fighter pilots, or TAC fighter pilots, but USAF and USN/USMC fighter pilots.

The momentum seems to be in the direction of more joint USAF and USN/USMC dissimilar ACT. I believe every fighter pilot who flies hopes this trend will continue. I cannot help but think that the US fighter community is finally getting their "stuff together." The 64th FWS is a perfect example of what can be accomplished in dissimilar ACT training, and the College Dart program is that extension, or "fourth stage," of the air combat training discussed in your excellent article.

Maj. Edward A. Woelfel
Colorado Springs, Colo.

• *We agree. By sharing the knowledge of all USAF and USN/USMC fighter crews, we can ensure that all of our aviators have the latest and best tactics and the experience to properly use them.* AIR FORCE *Magazine strongly supports this type of training and was the first military journal to publish an article on the many benefits of ADC's dissimilar aerial combat training. (See* AIR FORCE *Magazine, March 1973, "Dissimilar Aerial Combat Tactics," by Capt. Don Carson.)*—THE EDITORS

75th Air Depot Wing History

Gentlemen: I served in the 75th Air Depot Wing at K-10 AB, Korea, from 1954 to its closing in 1955, and was one of the last thirty-nine airmen at K-10 when it was officially turned over to the South Korean Air Force.

K-10 was originally one of those Japanese bases in Korea that was utilized by the USAF in 1950. It was known as Chinhae Airfield and based the 18th Fighter-Bomber Group, 12th Fighter-Bomber Squadron, 67th Fighter-Bomber Squadron, and the 2d South African Air Force Squadron. In December 1952, the 75th Air Depot Wing arrived at K-10 from the US. It was the largest wing ever activated at Kelly AFB and was the largest movement of property at one time.

My old squadron from K-10 will be holding its reunion this summer, and I am preparing a history of K-10 to be presented to those attending. I would like to hear from anyone who served there. They need only to send their name, address, and the dates of service at K-10. A letter concerning more specific information will follow.

Vern Wriedt
2121 Cedar St.
Davenport, Iowa 52804

UNIT REUNIONS

Antique Airplane Club

The Antique Airplane Club of Greater New York will hold its twelfth annual fly-in on Saturday and Sunday, July 20 and 21, at Brookhaven Town Airport, Shirley, N. Y. (L.I.). A dinner dance will be held Saturday night at a nearby inn. All owners and pilots of antique, homebuilt, or ex-military aircraft are invited. Hotel, motel, tiedown, and hangar accommodations are presently being arranged. Interested parties contact

Harry E. Geddes, Secty.
374 Latham Rd.
Mineola, N. Y. 11501
Phone: (516) 746-3453

Eagle Squadron Association

Members of the Eagle Squadron Association are holding a reunion in San Diego, Calif., June 21–23. Members of the Association are Americans who served in Nos. 71, 121, or 133 Squadrons of the British Royal Air Force prior to US entry in WW II. Details from

James A. Gray
7283 Kolb Pl.
Dublin, Calif. 94539

Wolf FACs

The Wolf FACs are holding a reunic June 14–16 at the Union Plaza Hote Las Vegas, Nev. Get in touch with

Capt. Bill "Shortfinge 3422 Wayne St.
Las Vegas, Nev. 8912
AUTOVON: 682-2490/2491

7th Bomb Group (H)

The 7th Bomb Group (H) Assn., co sisting of WW II veterans in Jav Australia, and CBI, will hold its 19 reunion in Alexandria, Va., July 3– For information contact

R. H. Stockton, Reunion Sec 19 W. Cedar St.
Alexandria, Va. 22301
Phone: (703) 549-2594
or
Larry Heuser
2 Cervantes Blvd.
San Francisco, Calif. 94123
Phone: (415) 931-1829

8th AF Composite Command

The first reunion of the 8th Air Force Composite Command will be held i Mount Clemens, Mich., at the Clinto Gables Hotel, on July 4–6. Contact

Lt. Col. Marjorie O. Hunt, USAF (Ret.) P. O. Box 822
Mount Clemens, Mich. 48043
Phone: (313) 465-1493 or 463-1528

57th Bomb Wing (M)

The 5th annual reunion of the 57th Bom Wing (M) will be held at Williamsbur Va., July 24–28. Headquarters will b at the Hilton 1776 Inn, with several func tions scheduled at NASA Langley Re search Center and Langley AFB. Writ

Harold Lynch, Secy.-Treas. c/o Alumni Relations Offic Springfield College
Springfield, Mass. 01109

68th Fighter Squadron

On July 12–15, the 68th Fighter Squac ron will hold its 13th biennial reunio in Santa Barbara, Calif. Please contac

Lawrence W. "Moe" Morehea 517 Chadwick Way
Goleta, Calif. 93017

100th Bomb Wing

The 100th Bomb Wing (SAC), stationed at Pease AFB, N. H., during 1956–66 will hold a first reunion August 9–1 at Pease AFB. For initial details, al former 100th BW members please ge in touch, by June 30, with

Paul Power
24 S. Newington Rd.
Portsmouth, N. H. 0380

388th Bomb Group (H)

A reunion of former members of th 388th Bombardment Group (H), 8th Ai Force, will be held at the Osage Hous in the Ozarks August 1–4. A 388th Bom Group history book is also available.

Edward J. Huntzinger
P. O. Box 965
Cape Coral, Fla. 3390

SCIENCE/SCOPE

Year-long tests of the U.S. Air Force's F-15 radar, built by Hughes, were completed recently and the radar has been accepted for Category II testing. Its performance aboard three F-15s was scored good to excellent in more than 99 percent of some 380 flights. Test pilots uniformly praised its look-down capability and its clutter-free display.

Iran has awarded Hughes a $25-million contract to design and equip an electro-optical facility in a new 480,000-square-foot building at Shiraz. It will be a division of Iran Electronic Industries, which is the result of the Shah of Iran's stated goal of broadening his nation's technological and industrial base. It will support Hughes systems used by Iran and will eventually be used to fabricate complete components, subsystems, and systems. About 170 Hughes engineers and technicians and their families will be transferred to Shiraz during the next 24 months.

Westar, the first U.S. domestic communications satellite, which was successfully launched by NASA April 13, was built for Western Union by Hughes. Positioned 22,300 miles above the equator in a geostationary orbit, Westar is designed to relay telegram, mailgram, voice, television, and data communications to the continental U.S. as well as Alaska, Hawaii, and Puerto Rico. A second Westar is scheduled to be launched this summer and a third will be held on the ground until traffic growth warrants its launch.

The Phoenix missile went to sea during the U.S. Navy's F-14 Ship-Suitability Trials off the Southern California coast recently. Missile, aircraft, and AWG-9 weapon control system were completely exercised for the first time aboard the USS Enterprise. The trials included underway replenishment of Phoenix missiles from an ammunition ship, handling of the missiles from magazine to aircraft, and a firing mission in which a Phoenix-loaded F-14 took off from the carrier. The Phoenix, the AWG-9, and the shipboard support equipment were built by Hughes.

NASA's Pioneer-Venus flight plan for 1978 employs two spacecraft. One will orbit Venus in a highly elliptical trajectory, transmitting data for a full Venus year (eight Earth months). The second will launch one large and three small probes before it enters Venus's hot, dense atmosphere. The probes will transmit data to Earth during their hour-long descent to the planet's surface. NASA has selected Hughes for the conceptual design, building, and testing of the two spacecraft.

A military version of the Interdata Model 70 minicomputer is being produced by Hughes under license from Interdata, Inc. Designated the H-1670, it is packaged to withstand the extremes of shock, vibration, temperature, and humidity encountered in tactical military operations. The micro-programmed 16-bit processor has 16 hardware general registers, addressing of main memory up to 262K bytes, and 115 instructions. All Model 70 software is directly applicable without modification.

Airpower in the News

By Claude Witze
SENIOR EDITOR, AIR FORCE MAGAZINE

The Budget Is Off the Pad

Washington, D. C., May 7

The debate on the Fiscal 1975 federal budget is under way. The House Armed Services Committee is scheduled to vote today and report its decision on authorization for Defense Department procurement and research and development.

The Pentagon asked for $23.1 billion. The House committee has cut the authorization by $487.2 million, to $22.6 billion. In full truth, more than $800 million was cut from the proposed budget, but the House committee, for reasons of its own, then added $300 million for projects not sought by the armed forces.

Additions to the bill are:

- $104.9 million for twenty-four LTV Aerospace A-7D aircraft for modernization of the Air National Guard.
- $205.5 million for twelve FB-111 aircraft for USAF. They are made by General Dynamics.
- $14.6 million for more than 300 armored personnel carriers.
- $7 million for Navy trainer aircraft.

Reductions of particular interest to the Air Force, as announced by Chairman F. Edward Hébert, are:

- $257 million from procurement funds for the AWACS system; this would cut the projected FY '75 buy from twelve to six airplanes. Boeing is the contractor.
- $50 million, the entire request, for a stretched-out version of the Lockheed C-141 transport.
- $107.9 million out of $155 million, sought to modify commercial aircraft in the Civil Reserve Air Fleet to facilitate their use by the military in time of war.
- $59.1 million in research and development, sought by USAF. All funds were eliminated for work on a SLBM warning system and air-to-air weapons technology. $15 million, the biggest cut, was in the funding requested for R&D on an advanced ballistic reentry system.

Actually, the USAF cuts in the RDT&E area were modest compared with the total changes. The Army took a slash of $105.6 million, the Navy $111.5 million, and other defense agencies $45.2 million. The Navy's proposed austere fighter, the VFX, is eliminated. The Army suffered major cuts in plans to develop advanced forward area and missile defense systems.

In the area of personnel, the House committee voted to cut the Pentagon's military strength by 2,810 and ordered all of the reduction to come out of the Air Force. At the same time, it increased the authorized strength of the Selected Reserve by 54,000 and cut 15,000 from the Defense Department's civilian personnel. The committee says when these changes are implemented, they will save $121 million a year.

The House committee voted a limit on military assistance to South Vietnam of $1.4 billlon, $200 millic less than requested by thc Administration. It also de creed that all future major combat ships built for ou Navy will be nuclear powered.

Mr. Hébert expects the authorization bill to be acte upon by the House before the end of May. There wil be two or three dissenting opinions in the House re port, expected to go to the floor with the authorizatio bill in about a week.

What We Need Is $871 Billion

This is an election year. Congress is in a hurry t leave the Hill and get on with campaigning. The voters, it is safe to say, will bring about many changes Watergate is here, and one year of it is not going t be enough. A bigger factor is that at least forty mem bers of Congress have announced their retirement The races are on already. What this means in terms o our major interests is twofold. First, the makeup o key committees is going to be changed, in some case drastically. Secondly, as already indicated by th House Armed Services Committee, we can expect th debate over the Fiscal 1975 Defense Departmen budget to be less prolonged than usual. There will b just as much heat and as little light as ever, but les time wasted.

As long as so much of this Congress is on the wa out, it is a good year to dissect, to some degree, th nature and background of the arguments about defens spending. The Pentagon already has presented figure to show that the military portion of the proposed budge is not as high as critics try to push it. And, there is n basis for unusual alarm about the fate of the budge this year. The outlook is that it will sail over waters n rougher than those of a year ago.

The Fiscal 1974 defense budget was cut $3.5 billic in Congress. A repeat performance is forecast. Amon the reasons is that détente with Russia looks shak more and more people think it is either a fraud or deception. Soviet military budgets, forces, and forwa deployments continue to increase. Of the $85.8 billic in spending requested by the Pentagon, almost all of is required by legislation already enacted by Congres About the only place that cuts can be made is in tl $23.1 billion sought for procurement and research a development. As noted above, Eddie Hébert's comm tee has examined this and found a way to cut t authorization by less than half a billion, after addi $300 million the Pentagon never asked for.

The military spending, as requested, accounts barely more than seven percent of the total fede budget for Fiscal 1975. Yet, it is that seven perc that seems to be, year after year, the target of ev Senator and Representative who wants Uncle Sam

rk over dollars for some nonmilitary project. We are l familiar with the word picture painted by the news-aper columnist and the limousine liberal who knows ow many social goodies could be bought for the price a B-1 bomber or an aircraft carrier.

We even have epithets applied to defense projects at are never used to modify nouns in speeches or agazine articles about nondefense projects. Take, for xample, the new subway currently being built in ashington, much to the distress of vehicular traffic on e streets. The original estimated cost of the Metro ystem, as it is called, was $2.5 billion. At least two ears from completion, the figure now is $3.5 billion nd still going up fast. A few miles north, in New York, ney are rebuilding Yankee Stadium. The cost al-eady is double the original estimate.

We have other new landmarks here in the Capital: he House Rayburn Office Building, the Kennedy Center for the Performing Arts, and the new J. Edgar Hoover Building to house the FBI. All have experienced monumental increases in cost during the course of construction. We also have some recent figures on the cost of running the Post Office. When Congress passed the Postal Reform Act in 1970, there was a lot of silly talk about how the postage we pay was going to meet all the bills; the system would be self-sustaining. Well, for Fiscal 1974, Congress has pumped nearly $2 billion of the taxpayers' money into a subsidy for the mailman, and the Postal Service still anticipates a deficit this year of $385 million. You can make your own comment about the quality of the service.

The point we want to make in AIR FORCE Magazine is that in not one case has a member of Congress or a watchdog of the press applied the word *overrun* to anything but an increase in the anticipated cost of a weapon system. *Overrun,* like *controversial* and *trouble-*

The Wayward Press

Up in Boston, a man named George linot answers questions submitted by eaders of the Boston *Globe.* In the is-ue of March 13, he printed this item:

"Q—What happened to the highly con-roversial swingwing F-111, the jet fighter n which we once placed such high opes. Aren't we ever going to build it?

"A—Probably not. Its cost estimates re running something like $4 billion ore than anticipated, and that's a lot f money even by Pentagon standards. n all, the costs of some forty-seven ma-or weapons projects in coming months re $21 billion more than their original stimates, with the F-111 leading the ay."

Well, the Air Force has 539 F-111s nd twenty-three more on order. Some f them are based in New England, not ar from the *Globe* offices. They have een flying for nearly ten years, have ore than 350,000 hours of flight time, nd have the best safety record of any entury Series fighter. They are not over-riced.

If you read the *Globe*, sprinkle it with alt.

* * *

A daily called *Newsday*, published on ong Island, is giving heavy coverage to he flyoff between the Fairchild Republic -10 close-support aircraft and the LTV erospace A-7D. This competition was rdered by Congress after the Fairchild lane, to be manufactured on Long Island Fairchild wins the contract, had won n earlier competition. *Newsday* says it as McDonnell Douglas that lost the first ound. Actually, McDonnell Douglas had othing to do with it; it was the Northrop -9A that was eliminated.

More seriously, *Newsday* ran a photo layout on April 14 depicting what the newspaper called the "Political Lineup for the Flyoff."

As supporters for the A-7D, there were pictures of "Rep. George Mahon, Sen. John Tower, Rep. Howard Cannon." Mr. Cannon, of course, is a Senator, as any competent newspaperman should know.

Then, on the side of the A-10's "political" enthusiasts, *Newsday* pictured "Rep. Otis Pike, Rep. James Grover, Gen. George Brown." General Brown is Chief of Staff of the Air Force, has never run for political office, and is a reluctant figure in the emerging dispute over the choice for a close-support airplane. He was misrepresented in *Newsday's* account.

* * *

Belatedly, the Miami *Herald* deserves credit in this space for an editorial giving credit to USAF and its Lockheed C-5A transport for their performance last October in the airlift to Israel.

"Along with many other newspapers, the Secretary of the Air Force itself, and countless congressmen," the *Herald* said, it had "deplored the cost overruns and performance failures which appeared to make the C-5A the flying fraud of all time. . . . But it worked. We wuz wrong."

We continue, today, to find references in the press to "the $250 million Lockheed bailout loan," a label commonly put on the Government Guarantee Agreement, under which the company has borrowed money from banks.

According to the Lockheed annual report for 1973, the loans now total about $200 million. The fees paid or accrued to the government through 1973 total $7,239,000. Except for administrative costs, that is $7,239,000 of profit for the taxpayers. Newspaper commentators, please copy.

* * *

In early April, David Brinkley, the pundit heard on "David Brinkley's Journal," a feature of the NBC Nightly News, made some comments about the defense budget. He said the military services seek "more money in peacetime than they ever spent during the war" and that he detects "enormous waste" in the rate of spending.

Well, about three weeks later, he got a snappy answer from Pierre Rinfret, an economist who delivers a commentary from time to time on CBS radio. Mr. Rinfret says that when David Brinkley ventures into the area of economics, he frequently makes mistakes, because he doesn't get his facts straight. Said CBS radio to NBC Nightly News:

"[David Brinkley] talked about the horrible increase in defense spending that's going to occur in 1974. Because if you look at the statistics on defense spending, in 1973 this country will have spent $74 billion, and the estimate for 1974 is $80 billion.

"David Brinkley should realize the government also has to pay higher prices for everything. And it does. If you correct defense spending for inflation, you will find that David Brinkley is wrong. In fact, the peak of defense spending, in the same prices throughout, occurred in 1968. And defense spending has been coming down every year since 1968."

That's show biz.

Airpower in the News

plagued, is a dirty word applied exclusively to defense projects. It is never used when more money is needed, in elephantine amounts, to finish a subway, a stadium, a gold-plated office building for legislators or bureaucrats, or to keep a government service limping along at the cliff-edge of disaster. The same people who see "massive fat and waste" in military requests gladly vote money for a Taj Mahal, or a fly-by-night social boondoggle. If the cost escalates, there isn't even any conversation about it.

You didn't read about it in the press, but a little less than a month ago a group of seven Representatives, led by Republican Jack Kemp of New York, took nearly nine pages in the *Congressional Record* to show Congress what the taxpayers should be screaming about. And it's not the cost of defense.

In summary, and this is an inadequate way to present the story, they found there are today more than 450 bills in the congressional hopper that, if made into laws, would cost $871,363,307,000 in the next four fiscal years.

What would we get for this money, if these proposals by Congress were enacted? That is suggested by the titles of the bills. We will list a few, chosen at random. The figures given are the estimated costs for Fiscal Years 1974 through 1977.

The Motor Vehicle Disposal Assistance Act, $100 million.

The Forestry Incentives Act, $100 million.

The General Education Assistance Act, $10 billion.

The Small Communities Planning, Development, and Training Act, $24 billion.

The Public Service Employment Act, $40 billion.

The Make John F. Kennedy's Birthday a Legal Holiday Act, the Make Martin L. King, Jr.'s Birthday a Legal Public Holiday Act, and the Make United States Flag Day a Legal Public Holiday Act come at $400 million each, for a total of $1.2 billion.

The Middle Aged and Older Workers Employment and Community Service Act, $350 million.

The Spirit of '76 High-Speed Rail Act, $400 million.

An act to Establish Abandoned Automobile Removal Programs, $152 million.

The Senior-Citizens Skill and Talent Utilization Act, $250 million.

The National Environmental Center Act, $406 million.

The Accelerated Indian Reservation Road Program, $225 million.

The Opportunities Industrialization Assistance Act, $450 million.

The Women's Educational Equity Act, $80 million.

An act to Establish Asian Studies Institute, $75 million.

An act to Establish Big Thicket National Preserve (Texas), $70.8 million.

An act to construct, operate, and maintain certain divisions of Central Valley Project (California), $67 million.

Increased participation in International Development Association, $1.5 billion.

Comprehensive Child Care and Child Developme Act, $1.6 billion.

Elderly and Handicapped Americans Transportati Act, $40 million.

Land Use Policy and Planning Assistance Act, $5 million.

By this time, the point is clear. One of the speake Rep. Samuel L. Devine, a Republican from Ohio, point out that Americans spent, in 1971, $664.9 billion for t items listed as personal consumption. But they wou have to produce more than that in the next four years $871.4 billion—to meet the demands of Congress if t 450 bills cited in this report were approved.

Rep. Edward J. Derwinski of Illinois doubted that t taxpayers, the money lenders, and the bond purchase could produce $871.4 billion in four years. Rep. Don H Clawson of California said "outdated programs tha have outlived their public purpose and usefulnes should be terminated. Programs should be shifted fron the national to the local levels, especially where suc activities are not constitutional responsibilities of th federal government."

Rep. Philip M. Crane of Illinois said it is fortunat that most of the 450 bills will die in committee pigeon holes, "but many of them, as well as some newcomers will be deposited in the hoppers when the next Con gress enters upon its labors. All too many of them wi be put on the statute books, and the taxpayers will fin their burdens heavier than ever."

The team led by Mr. Kemp did not list the sponsor of the 450 bills they discussed in the *Record.*

It would be interesting to know how many of th sponsors believe the $871.4 billion can be provided b taking waste and fat out of the Pentagon's $22.6 billio for procurement and R&D. There are some who be lieve it.

National security, by the way, is a responsibility the federal government. It is one of the few respons bilities assigned to Uncle Sam by the Constitution.

R&D Funding Under Fire

On the eve of Senate action of the Fiscal 1975 defense authorization bill, the Research and Development Subcommittee of the Senate Armed Services Committee recommended a cut of $395.8 million in the Pentagon's request for $9.3 billion for military R&D.

By a vote of three to two, the subcommittee favored deletion of $77 million sought to improve the yield and accuracy of strategic missiles. It was made clear the objection is based on a disagreement with Defense Secretary James Schlesinger's proposal to increase counterforce capabilities. The issue will be debated at length, in both houses of Congress and in conference, before final action is taken on the authorization bill.

The R&D subcommittee, headed by Sen. Thomas J. McIntyre of New Hampshire, also voted to reduce the $499 million B-1 bomber program by $44 million. This would limit the program to three prototype aircraft for flight testing before further congressional action on procurement.

USAF took the biggest cut from the subcommittee—$172.3 million. The Army was slashed $106 million, the Navy $98.5 million, and DoD $19 million.

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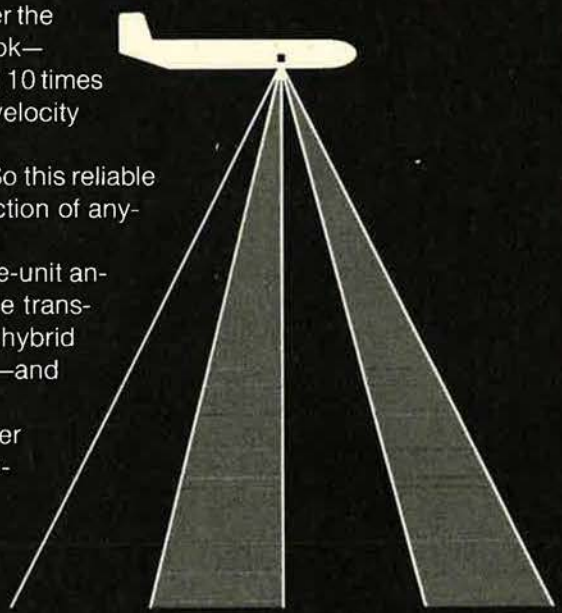

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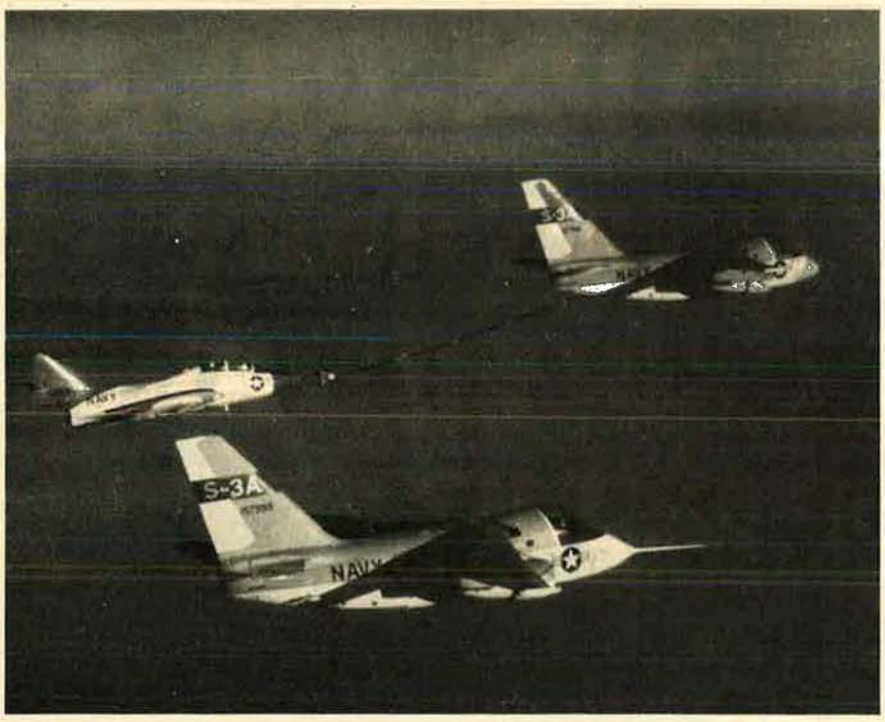
Aerospace World

News, Viev
& Commen

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE



So far so good, as the Navy's new S-3A Viking ASW aircraft recently completed the critical avionics/weapon system phase of its Navy Board of Inspection and Survey trials. Testing of the sub hunter has included numerous flights from both land and carrier. Navy may purchase as many as 187 Vikings. Fleet pilot training program is under way. Here, a refueling exercise.

WASHINGTON, D. C., MAY 3

Late-model B-52G and H bombers are currently being equipped with the AN/ASQ-151 Electro-optical Viewing System (EVS), developed by Boeing Co.'s Wichita Division.

The $212 million EVS program is designed to improve B-52 low-level flight capability by displaying terrain ahead of the aircraft in TV format on individual monitors.

EVS offers either a low-light-level TV or infrared presentation. Each can be overlaid with aircraft flight and terrain-avoidance data in the entire operating envelope from taxi to landing.

Thus far, B-52s on five SAC bases—K. I. Sawyer AFB, Mich., Ellsworth AFB, S. D., Grand Forks AFB, N. D., Loring AFB, Me., and Robins AFB, Ga.—have been equipped with the EVS system. Altogether, and by early 1976, some 270 aircraft will have been so equipped.

☆

In another SAC matter, Air Force Systems Command's Electronic Systems Division has completed installation of "electronic sentries" at twenty-three SAC sites to help protect SAC alert aircraft.

"These electronic sensors, which replace human eyes and ears, are unaffected by such problems as weather or fatigue and provide more effective physical security for SAC alert aircraft areas," Air Force said.

In the system, four types of sensors are wired into a central control tower for monitoring purposes. Should an intruder activate one or more sensors, a mobile security squad is immediately dispatched t Investigate.

Emplacement of the sensor sys tems concludes the first phase c "Safe Ramp," an overall securit upgrading of SAC facilities. Othe phases "will provide mobile elec tronic fences to protect alert park ing areas not now fenced, semi automatic entry control systems fo personnel identification in restricte areas, and intrusion detection fo each alert aircraft," Air Force said

☆

A milestone in development o USAF's new B-1 strategic bombe was passed recently with comple tion of the Preliminary Flight Ratin Test (PFRT) of the aircraft's Genera Electric Co. F101-GE-100 turbofa engine.

A successful PFRT is a must be fore the engine can be cleared fo experimental flight-testing, and thi particular rating test "was one c the most comprehensive to date, the Air Force said.

Strenuous maximum power en durance runs were conducted a sea level and under simulated high altitude supersonic conditions. Th latter test alone required eight hours of engine running time Twenty-nine other tests of compo nent and associated systems als were undertaken.

Four of the 30,000-pound-thrus engines are scheduled for installa tion aboard the first B-1 aircraf within the next few months, USA said.

☆

With the recent launch into earth orbit of Westar-1, America has opened a new frontier in domestic communications.

Built by Hughes Aircraft Co. Westar-1 will be operated by West ern Union, the first business firm t operate a domestic satellite commu nications system. (International sat ellite communications have been i operation for several years.)

In synchronous orbit at 22,30

iles, the satellite will serve government, business, and the general ublic. It will relay voice, television, rivate message, and data communications in the continental US, laska, Hawaii, and Puerto Rico.

Westar has capacity for about 2,000 voice channels or twelve simultaneous TV channels.

Westar is the third domestic satellite communications system to be ut in operation. The Soviet Union

or the US Marine Corps, Williams Research Corp., Walled Lake, Mich., has esigned this two-man flying platform. urbine powered, it can stay airborne or thirty minutes at speeds of sixty ph. It produces 700 pounds of thrust.

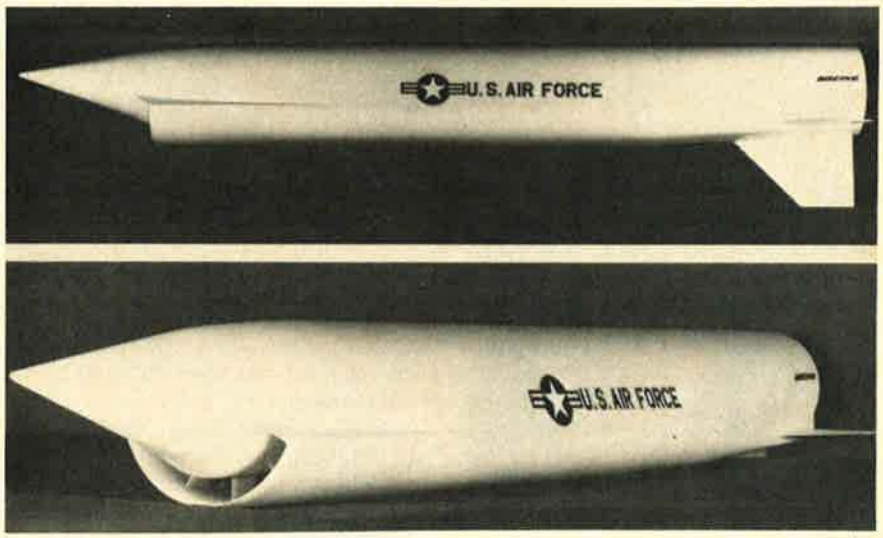
naugurated such a system in 1965, and NASA helped establish Canada's Anik system in 1972–73. Anik—Eskimo for "brother"—helped bring modern communications—including elevision—to Canada's Arctic regions. Domestic satellite systems are also being planned for Brazil, ndonesia, Iran, Australia, and the Arab states, officials said.

Launch of a second Westar is set for June, while a third satellite will be held in reserve until traffic growth warrants its use. By summer's end, Western Union will be providing service in New York, Atlanta, Chicago, Dallas, and Los Angeles.

Western Union's monopoly on domestic satellite communications will be short-lived, however. FCC has granted a number of other American companies—including General Telephone & Electronics, AT&T, and RCA—permission to set up satellite systems of their own. This is expected to lead to fierce competition and lowered costs for their services.

☆

Since time immemorial, man has used the stars to reckon his whereabouts on the globe. But now, through the use of the newly developed Automated Astronomic Positioning System (AAPS), a position can be calculated to within fifty feet.



Wind-tunnel model of Boeing Co.'s bid for a study contract for USAF's Advanced Strategic Air-Launched Multi-Mission Missile, being considered for both air-to-surface and air-to-air capabilities. Missile would be deployed during the 1980s as a follow-on to highly successful SRAM and would go aboard the B-52, FB-111, and B-1. McDonnell Douglas, Rockwell International, and Martin Marietta are competing.

Future models are expected to be even more accurate.

AAPS—the work of Air Force Cambridge Research Labs and Control Data Corp.—scans a field of stars above it and for a position match compares that image with what is stored in its miniature computer.

According to Control Data, the entire system, including computer and power source, can be transported by two men into almost any terrain. Termed "the first truly automated portable measurement system," AAPS has a computer element "small enough to fit comfortably in the palm of one hand."

Prospective civilian uses of AAPS: surface navigation and surveying, among other things.

☆

In a program designed to help fulfill the future officer needs of its Guard and Reserve components, Air Force will allow graduates of its Reserve Officer Training Corps to be commissioned directly into the ANG or Air Reserve.

Hq. AFROTC has been authorized training categories to accommodate about fifty rated and 150 nonrated ANG officers and some fifty rated and 100 nonrated slots in the Air Reserve.

These training allocations are for 1974's fall semester and are based on projected ANG and Air Reserve requirements for 1976. The 1976 commissioning date limits initial recruiting to sophomores and second-year juniors. Also, juniors and seniors planning graduate study may qualify.

The spaces to be available are based on definite Air Force specialty codes in specific units and will provide the cadets options not previously offered, such as selection of a guaranteed career field and location of assignment if within commuting distance of home or employment.

The commissioning program is geared to complement the regular AFROTC active-duty program and is tailored to attract students who wish to pursue a Guard or Reserve career.

☆

In another Air Force personnel program, called Palace Knight, USAF will try to make better use of its E-8/E-9 talent.

Aerospace World

Together again, Brig. Gens. Robert White, left, and Robert Rushworth, both of X-15 fame, discuss White's flight in another "15"—the new F-15 Eagle—undergoing test flights at Edwards AFB, Calif.

Recently selected as Airman Instructors of the Year at Mather AFB, Calif., were Sgt. W. D. Hinton, left, and TSgt. L. O. Reynolds. They man the altitude chamber control console at base's Aerospace Physiology and Life Support Center.

Under the program, senior NCOs will be encouraged to move voluntarily "from certain overage specialties to other skills now suffering a shortage of management talent," Air Force said.

CBPOs have been instructed to contact all NCOs now in surplus categories. Those with second specialties will be identified for possible utilization of their nonsurplus skills; others will be encouraged to apply for retraining into shortage AFSCs.

Excluded from the program are senior NCOs who will have less than twenty-four months' remaining service prior to reaching high year of tenure (as of June 30, 1974) and those who will retire earlier than July 1, 1976.

Officials hope that the redistribution will succeed through the volunteer system but cautioned that, if not, "selective" (involuntary) retraining might become necessary.

Specialty manning by E-6 and E-7 NCOs will be looked into for problem areas in the future.

☆

After five years of stiff opposition from environmentalists and others, the Navy's plan to build a huge grid for low-frequency transmissions has been curtailed for lack of funds, officials said.

Navy announced that it is suspending R&D on Project Sanguine, which called for construction of an underground grid in an area perhaps as extensive as 3,000 square miles. The facility, according to Navy, would have assured communications almost anywhere in the world with its fleet of submerged submarines. Currently, missile-carrying subs must surface or near-surface to receive communications.

Sanguine has been alternately blocked from proposed sites in Wisconsin, Texas, and Michigan, despite Navy assurances that the facility's transmissions would not harm either the environment or people in the vicinity.

☆

Another bastion of masculinity—would you believe the Pentagon Of-

Col. George J. Nelson, Air Force Academy Chief of Staff, talks over enlisted matters with newly appointed senior airman adviser—CMSgt. John R. Bass—who will double as Vice Chairman of Academy's NCO/Airman Advisory Council.

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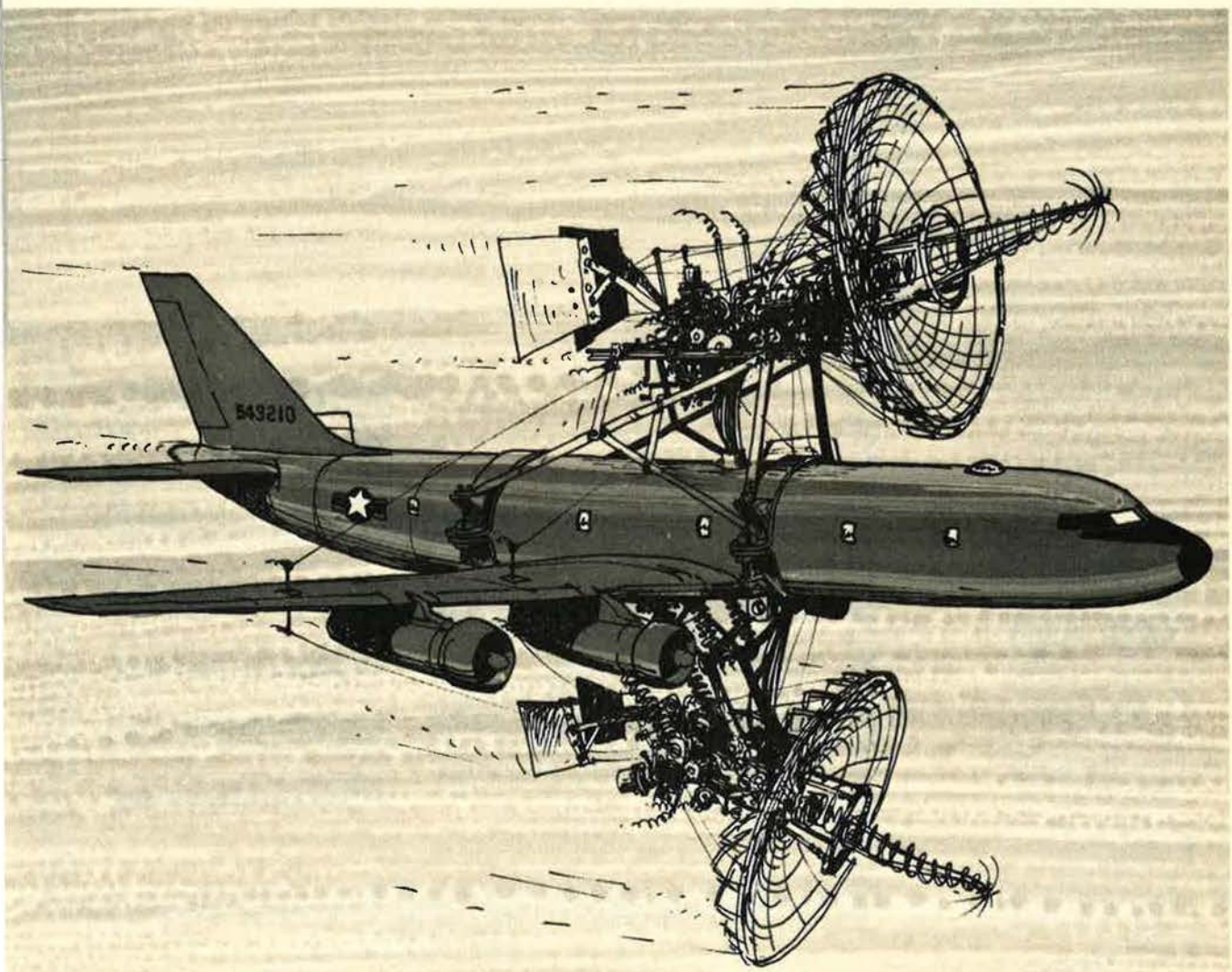

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erospace World

cers Athletic Club—is being reno-ated for coed membership.

Pentagon officials have already eceived applications from a num-er of women qualified under the ew rules: Officers serving in the Vashington, D. C., area and female mployees of DoD with Civil Service rades GS-11 and above.

A spokesman for Army's Wash-ngton Military District, which oper-tes the club, said that increased nterest by female personnel in join-ng brought about the change.

Current members are awaiting an absolute ban on streaking, we hear.

☆

Construction recently began at the Kennedy Space Center in Florida on one of the largest runways ever built. The project will result in the eventual pouring of concrete to a depth of sixteen inches over the runway's length of 15,000 feet and width of 300 feet.

However, before any concrete goes down, this huge area must be cleared of its cover of palmetto and wild grasses and leveled (the run-way will be at an altitude of nine feet above sea level)—a major proj-ect in itself. The runway is sched-uled for completion by midsummer 1976.

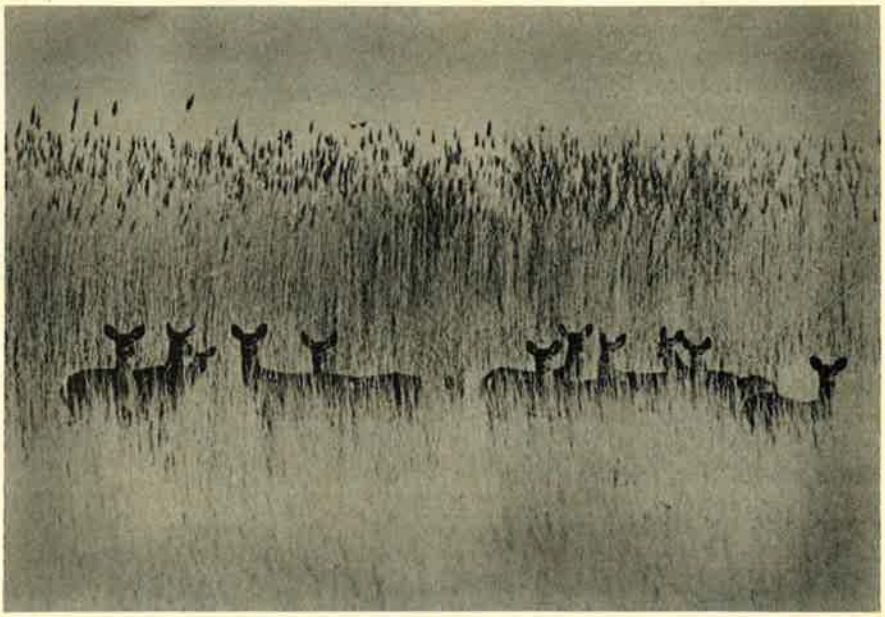
The runway has been designed for landings of NASA's Space Shuttle, currently under develop-ment. The Shuttle is expected to set down at angles between fifteen and twenty degrees at speeds up to 160 knots and with small on-board en-gines providing propulsion adequate for maneuvering, but not for a go-around. Stopping the craft will be landing-gear brakes, parachutes, and runway netting.

The facility, to cost about $22 mil-lion, is being built by Morrison-Knudsen Co., Darien, Conn.

The Shuttle, a manned earth-orbiting vehicle for the 1980s, is set for first flight in 1979. *(For further details, see April '73 issue, p. 54.)*

In a related matter, NASA picked McDonnell Douglas Corp. to per-form engineering and operation sup-port in the Space Shuttle project.

Under the $13.2 million two-year contract (two two-year extensions are expected), the company will pro-vide analytical support of technical and engineering systems, avionics, mission planning, software formula-tion, system integration, and crew procedures and flight planning.



Talent with a camera won Maj. Kent S. Reno, USAF (Ret.), top prize in an international snapshot awards competition with his ghostly photo of deer at a Delaware game refuge. The $5,000 prize will help the gifted amateur photographer with the costs of an expensive hobby.

☆

The remains of American airmen who died in two wars were recently identified and returned to their na-tive land for burial.

Among those having died in cap-tivity during the Vietnam War and released by the North Vietnamese *(see May '74 issue, p. 38)* were the bodies of USAF Brig. Gen. Edward B. Burdett, Lt. Col. Wilmer N. Grubb, and Lt. Col. Earl G. Cobeil.

And, after a lapse of some thirty years, two airmen killed when their fighter-bomber crashed in the moun-tains of Australian New Guinea were recovered after the aircraft's wreck-age was discovered by natives. The plane was a victim of bad weather on June 29, 1944.

Forensic experts at the US Army's

Index to Advertisers

Aerospace World

Identification Laboratory, Tachikawa, Japan, identified 1st Lt. Billy B. Hollingshead, pilot, and SSgt. Leonard H. Tilden, Jr., gunner.

Many of the returned American dead are being interred in Arlington National Cemetery, where a major renovation is under way. A key feature is construction of a tomb that will be the resting place for an unknown soldier of the Vietnam conflict. It will stand between the tombs for the unknowns of World War II and Korean War.

The renovation, set for completion by the nation's Bicentennial in 1976, is to include a 101-acre expansion of land set aside for burial of America's fallen.

A columbarium is also being built to hold up to 100,000 urns of the cremated remains of military people and others now not entitled to burial in the National Cemetery. (Burial space at Arlington has become increasingly limited.) Above the columbarium will be a chapel seating 336 persons.

Diversity of WAF careers is demonstrated by Airman Viki A. Cope, ground equipment repairman of the 323d Field Maintenance Squadron, Mather AFB, Calif.

☆

Now that the last manned mission to Skylab has been successfully concluded, has the earth-orbiting lab complex been abandoned to its fate? Not really.

Shortly after the third Skylab crew departed for earth, the lab was repositioned in orbit with its center aligned with a line through the earth's center and with its Multiple Docking Adapter (MDA) pointing away from earth.

The vehicle is now vertical to the earth's surface, a position that keeps it from tumbling. (Astronauts in the future might wish to rendezvous and dock with the lab to inspect it. Also aboard is a "time capsule" of several items to be retrieved at some future point, NASA said.)

NORAD space watchers check on Skylab from time to time.

☆

NEWS NOTES—Col. (Brig. Gen selectee) Claire M. Garrecht has been named Chief, Air Force Nurse Corps, succeeding retiring Brig. Gen. E. Ann Hoefly.

TAC has been designated as single manager of the **Airborne Warning and Control System**. "When operational," Air Force said, "AWACS will provide a variety of commands, including NORAD, TAC, AAC, PACAF, and USAFE, with an airborne surveillance, command and control center designed to provide battle management in the conduct of air warfare."

The **121st Tactical Fighter Group** Ohio Air National Guard, has followed New Mexico ANG's 150th TFG and Colorado ANG's 140th TFG in transitioning from the F-100 Super Sabre to new, production-line **A-7D** tactical fighter aircraft, built by LTV Aerospace Corp.

This spring, seventy-five top **Soviet aerospace specialists,** including four cosmonauts, spent a month at the Johnson Space Center, Houston, Tex., to mesh gears with US space experts on the cooperative manned space mission being planned for July 1975.

Lt. Col. Joseph J. Blum, USAF, has been named Chairman of the US Naval Academy's Department of Weapons and Systems Engineering, beginning next September, the **first USAF officer** to chair an Academy department.

Died: Aaron F. "Duke" Krantz, seventy-seven, pioneer aviator and aerial stuntman, in Florida in April. A World War II test pilot who retired as Bendix Corp.'s chief pilot in 1953, Krantz was named to the Aviation Hall of Fame in 1973. ■

A Total Capability

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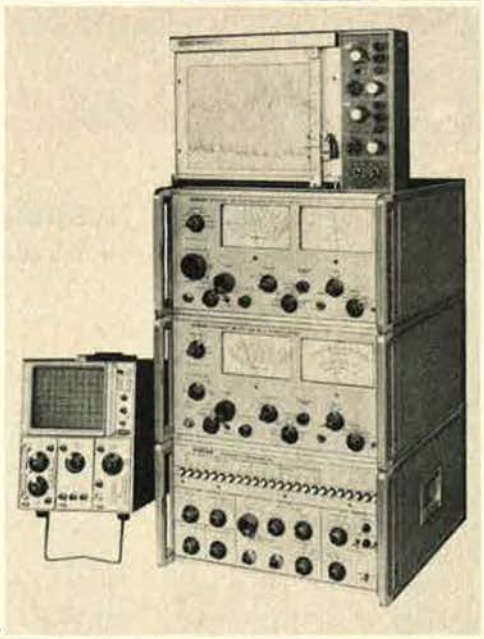

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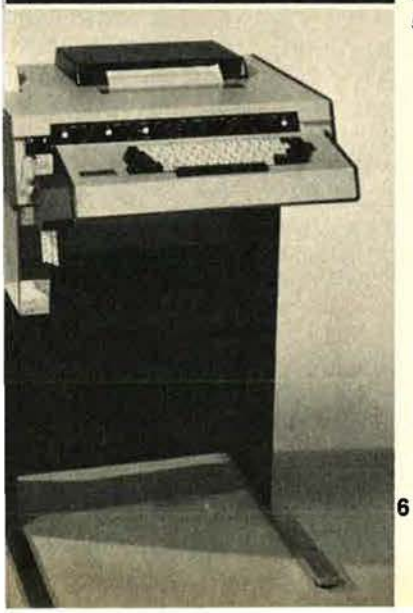

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AEROSPACE & MARINE SYSTEMS

In addition to four new ICBMs, a new SLBM, and new nuclear-powered submarines, the Soviet Union has under development a dozen new offensive missile systems and is pursuing an ominous, highly sophisticated new technology involving beamed energy weapons. The driving force behind these efforts to outdistance the US in weapons technology is Soviet Defense Minister Marshal Andrei Grechko, who directs the massive campaign to attain the . . .

SOVIET OBJECTIVE: TECHNOLOGICAL SUPREMACY

BY EDGAR ULSAMER

SENIOR EDITOR, AIR FORCE MAGAZINE

OFFICIAL Washington is coming around to a disquieting conclusion: The USSR is out to perpetuate the broad strategic advantages accorded her by the SALT I interim agreement on ballistic missile force limits. Moreover, the Soviets intend to solidify and capitalize on these imbalances through an aggressive modernization program designed to place the United States in a position of strategic inferiority.

The evidence that underlies this assessment is compelling and as formidable as the impasse in the current round of arms-limitation talks, caused by Soviet refusal to join the US in what Secretary of State Henry A. Kissinger calls a "conceptual breakthrough."

Item: Four new ICBMs are currently completing flight test in the Soviet Union. Two of them could have a refire capability through the use of cold-launch techniques, which eliminate the lengthy job of refurbishing a launching silo before another missile can be fired from it. Strategic analysts believe this capability could permit the Soviets to build up an operational missile force that far exceeds the numerical limitations of ICBM launch sites provided for by SALT I.

Item: On the strength of fragmentary but reliable evidence, a dozen major new offensive ballistic missile systems, in addition to the four mentioned above, are believed to be in early stages of development in the Soviet Union.

Item: There is ominous circumstantial evidence that the Soviets are making massive investments in high-power laser weapons and in a revolutionary scheme, first conceived by British

scientists after World War II, to develop beamed energy weapons by techniques currently beyond the US state of the art.

Item: The Soviet Union's new strategic bomber, "Backfire," is in series production, and the first squadron should be operational this year. American and British design engineers are unanimous in their opinion that Backfire has intercontinental range, either with or without aerial refueling. These experts have also determined that the new aircraft's high-altitude range is greater than that of the Soviet Union's Bison bomber, traditionally classified as an intercontinental weapon. (Secretary of Defense James R. Schlesinger recently told the Pentagon press corps that Backfire, which "is now being acquired by the Soviet Union," is refuelable. In his assessment, which is at variance with that of some other Western experts, Backfire requires a tanker to "give it true intercontinental strike capability." He added that the Soviets lack such a tanker aircraft at the moment. There are indications, however, that the new Soviet Il-76 transport is being groomed as a new tanker for the Backfire.)

Item: In the tactical arena, two new long-range fighter-bombers are entering the Soviet operational inventory in large quantities, the MiG-23 and the Su-20.

Western experts believe that these broad and alarmingly intensive campaigns to outdistance the US in strategic and other weapon technologies were conceived and are being carried out by Marshal Andrei Grechko, the Soviet Union's Defense Minister, who is described as "incredibly tough-minded in his determination to gain for the USSR the technological high ground of the future."

In spite of recent comprehensive advances in Soviet ICBM technology, the Russians continue to lag behind the United States in missile accuracy. On the surface, this may be a consoling thought, but there is evidence that the Soviets are seeking a free ride from the United States in their quest to boost ballistic missile accuracy. Soviet scientists and officials, who are roaming the United States freely, are focusing major attention on advanced computer technologies and inertial guidance systems related to ICBM accuracy. Short of copying US missile guidance and control systems, US experts believe it will take the Soviets between six and eight years to attain significant improvements in missile accuracy. This assessment is based in part on the fact that Soviet first-generation MIRVs, currently under test, do not incorporate the technology necessary to greatly improve accuracy over single RV systems in the operational inventory of the USSR.

An Abundance of New Soviet Systems

According to the Pentagon's best estimates, by mid-1974 the Soviet operational inventory of ICBM launchers, not counting test sites, will have increased from 1,550 in mid-1973 to 1,575, and the number of SLBM launchers from 550 to 660. By contrast, the US inventory of ballistic missiles remained at 1,054 ICBMs and 656 SLBMs, since the end of the last decade. Included in the increased Soviet SLBM total are at least three new Delta-class submarines deploying the new SS-N-8 missiles, which have a range of 4,200 nautical miles, or more than three times that of the SS-N-6 missiles carried by the older Yankee-class Soviet submarines.

Among the Soviet ICBMs are 288 SS-9 missiles, the bulk of which are of the MOD 2 type with a single large warhead and which some analysts feel could provide the combination of yield and accuracy needed to attack hard targets.

Three other modifications of the huge, liquid-fueled SS-9 are known to exist. They are the MOD 1, another single RV configuration with a warhead somewhat smaller than that of the MOD 2; the not clearly understood MOD 3, which has been tested both in a depressed trajectory mode and as a Fractional Orbital Bombardment System (FOBS); and the MOD 4, tested during 1973 and carrying RVs of an advanced design with parachutes presumably to assure a soft landing and recovery for test purposes. While the last tests of the MOD 4 version displayed slightly improved targeting flexibility, the system still lacks independent targeting capabilities and remains confined to a MRV, rather than a MIRV, status.

The current mainstay of the Soviet Rocket Forces is the SS-11, an ICBM with slightly higher yield but considerably less accuracy than USAF's Minuteman. Three versions of the SS-11 have been tested, but only two are cur-

rently deployed—the single-warhead MOD 1 and the three-warhead MRVed MOD 3.

The only solid-fuel ICBM in the Soviet operational inventory is the SS-13, of which sixty launchers are known to exist.

The Soviet Union has conducted about sixty flight tests of its four new ICBMs. Three of these were found to incorporate MIRVing; US experts are not certain whether the fourth, the SS-X-16, is MIRVed or not. Testing of these new missiles and the associated MIRVing took place after the conclusion of the SALT I accord on May 26, 1972, but does not, per se, constitute a violation of it.

The New Missiles

The four new Soviet missiles are the SS-X-18, a follow-on system to the SS-9, which can accommodate between five and eight MIRVed warheads with a range of more than 5,500 nautical miles; the SS-X-19, believed to be capable of accommodating between four and six MIRVs in the megaton range, which also covers distances of more than 5,500 nautical miles; the SS-X-17, also with a range of more than 5,500 nautical miles, which is thought to incorporate four independently targeted warheads; and the SS-X-16, about the same size as the SS-13, but with greater range and payload.

While the US has no hard evidence that the SS-X-16 is earmarked for land-mobile use, there are indications suggesting that the Soviets are developing such a basing option. (The United States has announced that it would consider Soviet deployment of an operational land-mobile ICBM to be inconsistent with the SALT objectives, even though the USSR categorically refused to bring mobile ICBMs within the purview of the 1972 Interim Agreement limiting offensive strategic forces.)

To date, the SS-X-16 has been tested only with a single warhead. Pentagon analysts find some indications, however, that the Soviets are developing a MIRV payload similar to those of the other three new missiles. Senior Defense Department officials have informed the Congress that either version of the SS-X-16, like the other new missile systems, could be reac for deployment in 1975. The SS-X-16's rang estimated to be more than 5,000 nautical mile is below that of the Soviet Union's other ne ICBMs.

The SS-X-17 and the SS-X-19 appear to b in competition with each other, with one or th other apparently meant to replace the mor than 1,000 SS-11s currently in the operationa inventory.

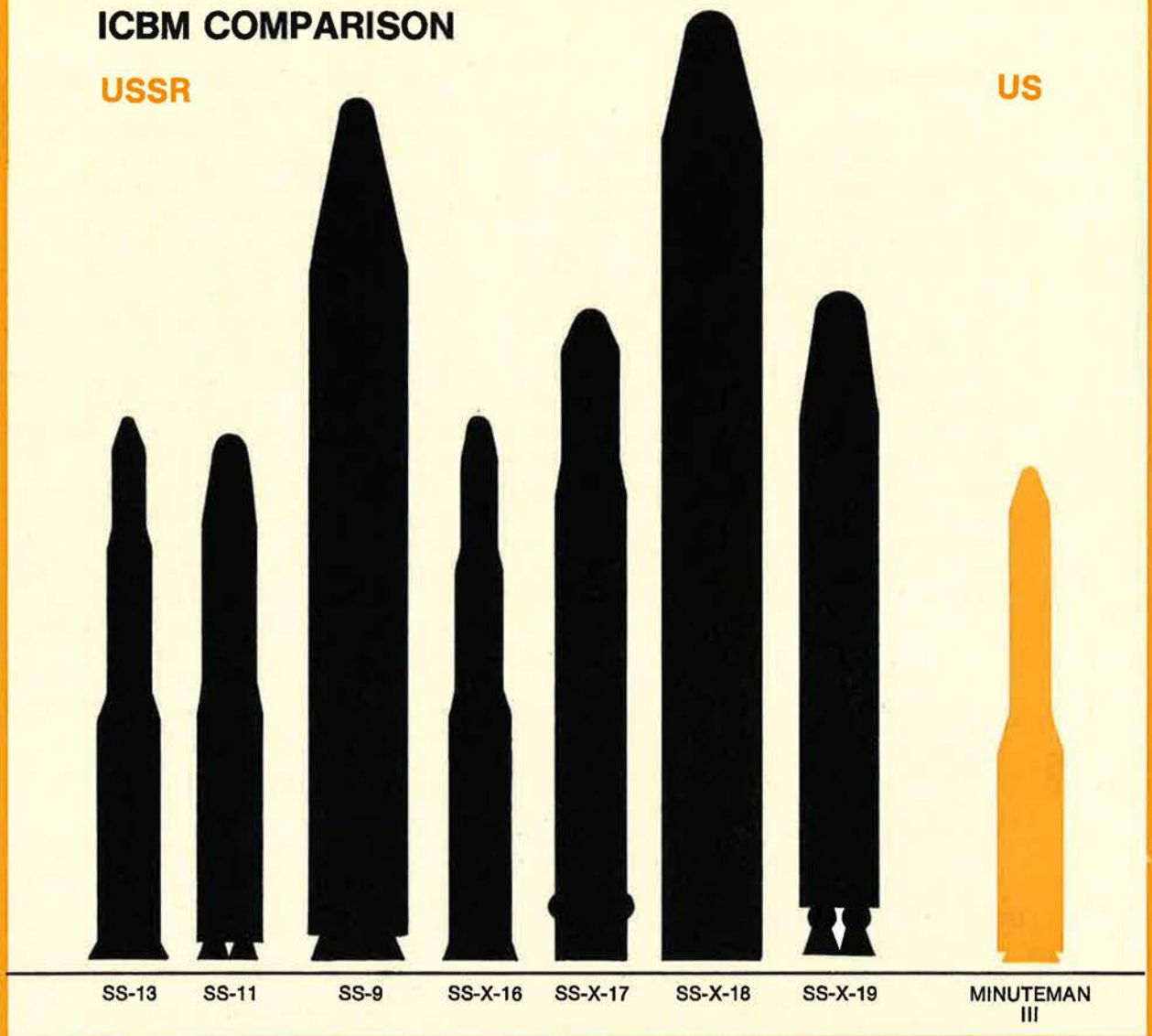
Pentagon planners view the potential of th SS-X-19 (or the SS-X-17) as highly destabiliz ing. Secretary of Defense James R. Schlesinge explained the threat of potential major asym metry in congressional testimony: "At the time of SALT I, we thought that if we could ge control of the SS-9 or its replacement, we would have a handle on the Soviet throw weight problem. What we were unprepared fo

"There is the potentiality that with the numbers and throw weight they are permitted under SALT I, that with the new technologies . . . [the Soviets] could . . . obtain a strategic advantage which would be contrary to . . . the May 1972 agreement."

was the enormous expansion of Soviet throv weight represented by the SS-X-19 as the po tential replacement for the SS-11 . . . [th SS-X-19] has a throw weight of two to thre times as much as even the SS-11 MOD 3 Therefore, the Soviets can have a very sub stantial amount of throw weight in the [year ahead]. They can have something in the orde of ten to twelve million pounds of ICBM throv weight, as compared to our own ICBM forc of approximately two million pounds throv weight."

Secretary Schlesinger added that, "to the extent we have been able to ascertain the nature of the tests, the SS-X-19 has had a remarkable success, and it may be the preferred missile that the Soviets would deploy" as a replacement for the SS-11. Dr. Schlesinger told a Senate committee that such a replacemen would cost the USSR the equivalent of abou $30 billion and that implementation of othe ICBM modernization efforts might drive thi total to as high as $40 billion.

ICBM COMPARISON



A GUIDE TO THE NEW SOVIET INTERCONTINENTAL BALLISTIC MISSILES

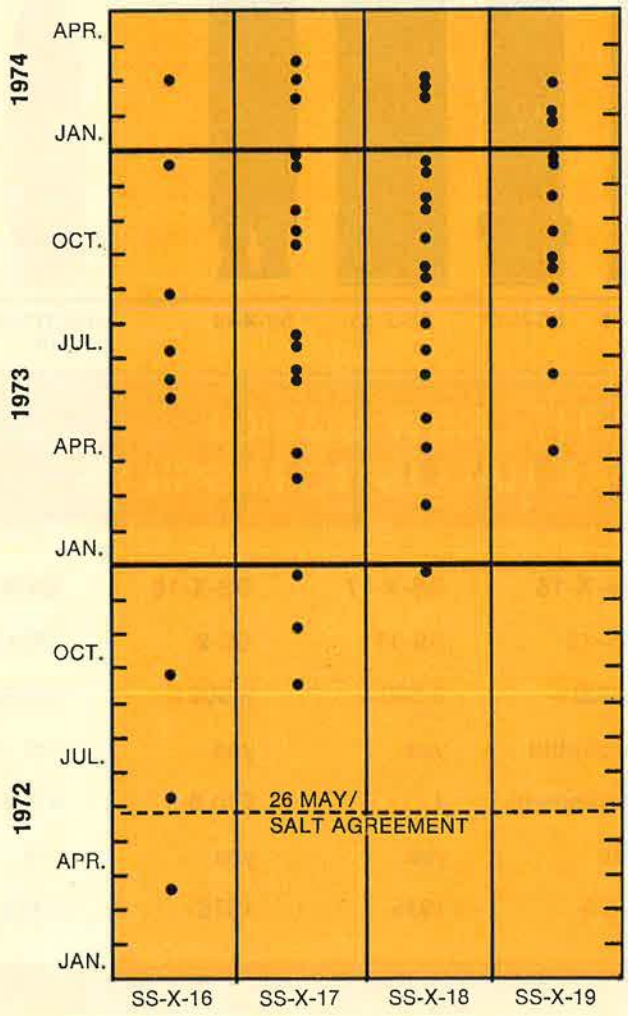
	SS-X-16	SS-X-17	SS-X-18	SS-X-19
Is follow-on to	SS-13	SS-11	SS-9	SS-11
Range (nautical miles)	5,000+	5,500+	5,500+	5,500+
MIRV warhead?	probable	yes	yes	yes
Estimated number of MIRVs	(unknown)	4	5 to 8	4 to 6
Digital computer?	yes	yes	yes	yes
Initial Operational Capability	1975	1975	1975	1975

TECHNOLOGICAL SUPREMACY

Technological Breakthroughs

The SS-X-18 is a huge liquid-fueled missile, probably intended as a follow-on to the SS-9. The new missile requires modifications to the SS-9 silos. Silo changes are permissible under SALT I if they do not exceed the fifteen percent limit imposed on dimensional increases. To date, the United States has observed twenty-five new large silos that could accommodate the SS-X-18, but has found no evidence of actual deployment of the new missile. Theoretically, the Soviets could deploy a total of 313 SS-X-18s under the terms of the Interim Agreement by using the twenty-five new large silos and by retrofitting the existing 288 SS-9 silos. Under the US perception of SALT I's Interim Agreement, the USSR is held to a sublimit of 313 so-called modern large ICBMs, typified by the SS-9 and SS-X-18.

SOVIET OFFENSIVE MISSILE R&D



The four new Soviet ICBMs incorporate what for the USSR constitutes a technological breakthrough, a post-boost vehicle similar to those of Minuteman III and the US Navy's SLBMs, which serves to dispense multiple independently targeted RVs (MIRVs) in the manner of a bus. In addition, all four systems have digital computers aboard their post-boost vehicles. The "staggering and surprising breadth and depth" of the Soviet ICBM modernization program, according to Secretary Schlesinger, is further manifested by "new guidance concepts, two different types of post-boost vehicle propulsion, and two different types of launch techniques."

Hand in glove with the ICBM development programs is what the Chairman of the Joint Chiefs of Staff, Adm. Thomas H. Moorer, described as "the parallel construction and modification of hardened silos, capable of surviving appreciably higher overpressures and ground shocks." (Some US analysts believe that some Soviet hardening levels exceed 3,000 psi overpressures, or triple the hardness of the older Soviet missile silos.)

New Submarine Threats

As part of what Admiral Moorer termed the Soviet Union's "unprecedented major commitment to the modernization of its strategic forces," the USSR has deployed the new SS-N-8 missile on "at least three Delta-class submarines." Explaining to the Congress that the 4,200-nautical-mile range of the new Soviet SLBM is the longest of any operational sea-launched ballistic missile, he pointed out that "this extra range is significant when compared to the [1,300 nautical mile] range of the [older] SS-N-6, because it greatly enlarges the ocean space available for patrol while remaining within range of the United States. As a result, both our SLBM launch detection and antisubmarine warfare [ASW] search problems are magnified. In addition, there is tenuous evidence that some Delta submarines now under construction are being lengthened. Should the extra length be used to accommodate additional SLBMs, a slightly modified Delta, equipped

The Soviet Union has conducted about sixty flight tests of its new family of ICBMs since SALT I. Each dot on this chart represents a test launch.

vith more than the standard twelve SLBMs nay be in production."

Under the terms of the SALT accord, the JSSR is permitted up to 950 "modern" SLBMs nd sixty-two "modern" ballistic missile subnarines. Senior Defense Department officials stimate that the Soviet Union will continue to produce modern ballistic missile submarines at a rate of about six to eight a year and report that eighteen or nineteen Delta-class submarines were either completed or in assembly at the start of this year.

At the same time, the Soviet Union apparently has launched a program to modernize the thirty-three Yankee-class submarines, which were first deployed in 1968. Concurrently, an improved version of the Y-class SSBNs' ballistic missile, the SS-N-6, capable of accommodating three separate but not individually targetable warheads, is nearing operational status. This would make the Soviet missile similar to the US Navy's Polaris A-3.

DoD's James R. Schlesinger feels the Soviets have the potential to circumvent the May '72 SALT pact.

There is no evidence, however, that either the SS-N-6 or SS-N-8 SLBMs are being MIRVed in the manner of the US Navy's six to ten warhead Poseidon missiles or that either missile is being tested in a depressed trajectory mode.

Potential for Circumventing SALT I

Although the United States has no evidence that the Soviets have as yet introduced any of the new MIRVed ICBMs into their operational inventory, Dr. Schlesinger expressed the belief that "the Soviet Union will seek to demonstrate its capability to match that of the United States in the area of high technologies, including the MIRV area, and for that reason there will remain pressure within the Soviet system for deployment of MIRVs." As a result, he explained, "there is the potentiality that with the numbers and throw weight they are permitted under SALT I, that with the new technologies . . . they could, as I have suggested, obtain a strategic advantage which would be contrary to the spirit, and, as a matter of fact, to the letter of the May 1972 agreement."

Translated into specific numbers, the potential throw-weight advantages accruing to the Soviets from SALT I and the new generation of MIRVed ballistic missiles amount to the equivalent of about 15,000 RVs of the same type as Minuteman IIIs, about 33,000 warheads of the US Navy's Poseidon SLBM, or about 8,400 larger warheads with a yield in the megaton range. By contrast, the United States, at this time, has programmed only about 2,000 warheads for its ICBM force. Even if the US were to MIRV its entire Minuteman force, instead of, as presently planned, MIRVing only 550 of the 1,000 missiles, that figure would still be only a fraction of what the Soviets could deploy.

Because of lower missile accuracy than that of the US, the Soviet throw-weight advantages are not being viewed with deep alarm by Pentagon planners at this time. As Secretary Schlesinger testified, "I do not expect they [the Soviet throw weights] will bother us until 1978 or 1980."

The long-term upshot, in the Secretary's words, is, however, "the possibility that future Soviet leaders might be misled into believing that such apparently favorable asymmetries could, at the very least, be exploited for diplomatic advantage. Pressure, confrontation, and crisis could easily follow from a miscalculation of this nature."

Dr. Schlesinger's pledge that, "wherever they [the Soviets] go, we shall be prepared to match them" seems worthy of the wholehearted support of the Congress and the American people. ■

These characters say, "Not clear! How mysterious!" (Calligraphy by Harry S. C. Yen)

During recent months, there have been increasingly frequent reports of ferment within the People's Republic of China. Criticism of honored leaders and institutions, an apparent return of anti-Western sentiment, and sudden changes in the military hierarchy seem to betoken turmoil that borders on the irrational. The author discusses these events in their unique context as he examines the question . . .

WHAT'S GOING ON IN CHINA?

BY COL. ANGUS M. FRASER, USMC (RET.)

THE wheel is turning again in the People's Republic of China (PRC). What we are seeing is getting more attention in the American press than it might have several years ago. Our general interest in China has been heightened and sharpened by the improvement in US–China relations as exemplified in the Nixon visit and the exchange of liaison offices between Washington and Peking.

But now there is evidence of turmoil on the mainland. There has been a major military shake-up. Western culture—music and literature—so recently welcomed and praised are suddenly condemned as bourgeois and decadent. There is unrest in the schools and in the political life of the nation. Strange and ambiguous attacks are made on historical figures. What's going on in China?

The Chinese, as we would expect, have a saying that describes it. The accompanying characters say *mo ming ch'i miao*—"Not clear! How mysterious!" But to stop here will, of course, not produce understanding. What we are seeing on the China mainland today may be strange and mysterious to us, but not to China's leaders.

This article is not a defense of Mao's principles. It is an attempt to fit current events into a framework that will perhaps help us better to understand Communist China in the world today. It must be clear that Peking has values and goals quite different from our own. What sort of nation is this? Where does it want to go? It may be that China sees herself eventually as the ruler of a pacified, socialist world. It may be, but not within any period we can now visualize. China must focus on her immediate problems of domestic harmony, economic progress, and defense.

The Nature of Maoist Thought

The situation on the China mainland today is all of a piece with what has been going on there from the beginning of the Communist movement. Today, events become more clear, less mysterious, when examined in that context; so it is helpful to recall some elements of Chinese Communist philosophy over the past half century before attempting to evaluate the current turmoil, which otherwise may appear to be somewhat irrational.

No single theory or interpretation can account for everything that has happened since the party was formed in 1921, but there may be some return from a search for guiding principles. The Chinese revolution and the Communist state of today are not the single-handed product of Mao Tse-tung, but there is no major policy or practice that does not, in some way, bear his imprint. Chinese Communist history is one of continuing struggle within the party and of experiment and change. Nevertheless, within any pattern, however complex or disorganized in Western eyes, there is a continuing element. This is the constant imperative of Mao's belief in both the desirability and possibility of producing the new socialist man. Classical Communist theory has been interpreted and reshaped by "Mao Tse-tung Thought" into a unique doctrine that is China's alone.

Mao became involved with communism in 1919, when he was twenty-five. His progress upward within the party was uneven, but his activity was always high. The Long March of 1934–35, when the Chinese Red Army retreated to Shensi Province, in Western China, brought him (or so it is now claimed) to the Chairmanship of the Politburo in January 1935. He has been at the top ever since, despite many efforts to displace or neutralize him or to make his position ineffective.

Mao has felt strong and continuous concern over the tendency of men to lose their revolutionary zeal and their desire to serve the people. He has always suspected that a return to bureaucratic or self-serving styles was a natural tendency, and he has fought against it. The lack of a spirit of self-sacrifice and of involvement in great causes was, in his view, extremely likely among those who had not the experience of the actual revolution—most particularly youth, born and growing up in a society whose antecedents they only knew about secondhand. It is not too difficult to ascribe a great body of the actions and programs that seem so strange to us to the operation of Mao's constant imperative.

His "socialist man" should live in a world where service to the state and to the collective idea of "the people" are the greatest good and where the practices and products of "imperialism" and "capitalism" (as defined by him) are the greatest evil. If we can accept this rather simplistic summation of Mao's principles, while keeping in mind the deep sense of national and ethnic identity that exists in almost all Chinese, it may be possible to develop some plausible explanation of the recurring turbulence that the outside world thinks it is seeing.

Some Background

It is necessary to understanding to place the things we are seeing today in the stream of Chinese Communist history. There are connections and continuities, and they are important. Until 1949, the Chinese Communists were fighting and working to survive as a political entity. In 1949, overtaken by nationhood, they faced an entirely new set of problems. The story has been one of struggle and change. Part of the struggle has been reflected in a number of programs, each as curious in its time as today's events now seem. The "Hundred Flowers" campaign of 1956–57 was apparently a benign attempt to get all the best minds in China to speak up in the interest of improving things. The result was a shocking (to Mao) parade of dissent and discontent. The blooming and contending soon were brought to an end.

The "Great Leap Forward" was an attempt, in early 1958, to spur industrial growth by heroic labor efforts and the establishment of such small enterprises as the inefficient "backyard furnaces" for steel production. The Leap ended in a massive stumble. There have been many twists and turns in agricultural policy, with private plots and personal incentives now established, now abolished. Levels of command and function in farming and industry were varied, and several styles of community

organization were tried. The Army was increasingly politicized. Ranks were abolished, as were traditional perquisites. Relations with the Soviet Union deteriorated until, in 1962, all Russian aid and advisers were withdrawn.

Finally, of course, there was the cataclysm of the Great Proletarian Cultural Revolution of the late 1960s. Memories of its excesses are still green, and even now we may ask, "Why did they do it?" The methods of that movement, however odd they may look, did produce certain things that comport with Mao's vision and his fears. The young people of the country were given, in the Red Guard movement, a revolutionary experience—however synthetic. Further, the bureaucracy at every level, from Peking to the remotest village, was badly shaken by violent criticism, punishment, and by being turned out of office. The goals may have been questionable and the methods clumsy, but the Cultural Revolution did concern itself with the things that were vital in the Maoist universe.

The national program after the termination of the Cultural Revolution in 1969 looked like a rational attack on the real problems of the nation. Attention was given to economic progress and improved relations with the outside world—but certain principles were not forgotten. The social structure was still oriented on the "worker, peasant, soldier" order. Education remained as the tool of politics and ideology. Trade with the non-Communist world increased greatly, but certain rules of self-sufficiency and public interest still governed. The period of relaxation in Peking did not signal any basic change in antagonism toward "imperialism" (read United States) and "social imperialism" (read Soviet Union). The changes were tactical and designed to give maximum gain to Chinese progress.

Since October 1971, when the People's Republic of China displaced the Republic of China in the United Nations, the Peking leadership has moved rapidly on the trade and diplomatic fronts to enter more fully into the world. The most spectacular event has, of course, been a new relationship with the United States —a happening too well known to require retelling here.

The phenomenon of Chinese change probably has many causes, but we may be sure that one of the chief motivations has been the desire to reduce the possibilities of an attack by the Soviet Union. Beginning in early 1969, the Sino-Soviet border confrontation has involved the forward deployment of increasingly large forces on both sides. It is certainly reasonable to think that both countries have contemplated the possibilities of major engagement; there is something more than bluff or intimidation in the situation.

The question to be asked now is what restraint Peking feels on her internal political activities because of the external threat to her northern borders and territories. There is no answer supported by public declaration, but it appears that the situation has stabilized to some extent. The level of military forces at which stabilization took place is much higher than that existing in March 1969, and no doubt much more dangerous, but the immediate prospects are good enough to let the Chinese leadership accept a certain amount of interior turbulence.

It is worth noting, however, that nothing like the role played by the People's Liberation Army in the Great Proletarian Cultural Revolution is evident in the current operation. Chinese defense preparations continue, producing small but significant numbers of newer conventional weapons and nuclear weapons of numbers and types clearly meant to deter the Soviet Union by raising the cost of attack. Adm. Thomas H. Moorer, Chairman of the US Joint Chiefs of Staff, has recently noted some slowing in output rates, but whether this denotes production problems or the deliberate establishment of more modest goals cannot be determined. In either case, there is no observable panic in Peking.

The Nature of Current Affairs

Accounts of Chinese affairs today suggest a division into four general categories: military events; foreign-affairs actions; internal social, economic, and political actions; and attacks on certain foreigners and on native and foreign cultural phenomena.

Lin Piao, the Minister of National Defense, disappeared (or was last seen) in September 1971. It was two years before Peking took public notice. It then was revealed that Lin, failing in his plot to kill Mao and take over, fled in an airplane that crashed and burned in Mongolia. About the time of Lin's disappearance (we can never be absolutely positive about these things), four other senior military officials dropped from sight. Even stranger than the Lin affair is this one. Today—two and one-half years later—there has been no open explanation. Even more curious is the fact that there are still no occupants of the assignments these men held.

To focus on this strangeness, we can relate the situation to the functionally equivalent American officials. The Secretary of Defense disappeared, but we have been told that he died in traitorous flight. Also, long invisible,

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and with no acknowledged replacement even on an "acting" basis, are the Chairman of the Joint Chiefs of Staff, the Chief of Staff of the Air Force, the Vice Chief of Naval Operations, and the Director of the Defense Supply Agency.

Another unusual internal military event has been the simultaneous transfer of eight of the eleven regional military commanders. The men, accounted very powerful and influential, were moved in a short period about the first of this year. If, as many believe, a regional power base did give these men great leverage against the central authorities, this move must be seen as a deliberate reduction of their voice in national affairs.

Externally, and despite a concern about the northern borders, the Chinese moved in January and February of this year to assert physically and by force of arms their claims to first the Paracel and then, at a somewhat lower level of force, the Spratley Islands in the South China Sea. It may be that oil is involved. It has also been asserted that these locations would improve China's ability to track Soviet naval forces. Whatever the reason, the Chinese Navy took action well beyond its normal operational ranges, overcame South Vietnamese occupants, and demonstrated that the US, in at least this case, was not disposed to intervene.

In foreign affairs, Peking has been very calm and reasonable. Assurances have been given both Malaysia and Thailand that Peking was not supporting insurgents in those countries. The general foreign-policy stance has included the traditional claims to third-world leadership, relatively normal (for the PRC) activities abroad and in the United Nations. The polemics against the US and the Soviet Union continue, with Russia getting much the larger share in terms of both volume and bitterness.

In deference to their own extreme leftists, Peking's leaders must always be seen as keeping a clear distance from real friendliness and cooperation with the other side. This was made clear in the Tenth Party Conference when Chou En-lai produced Lenin's arguments for doing business with those you oppose when the alternative is unpleasant. Late in February 1974, Chou also rationalized the Chinese style, noted the internal and external troubles of both superpowers, and took satisfaction in what he saw as declines in the fortunes and influence of these nations.

(It is recognized that any attempt to write seriously about the People's Republic of China in so short a space is doomed to superficiality and great omissions. For a close analysis of Communist China's foreign policy since 1949, the interested reader would do well to read *China's Turbulent Quest,* by Harold C. Hinton, Macmillan, 1970.)

Internal Politics

It is in the internal political situation that the greatest and apparently most extreme actions are taking place. The present phase may be seen as beginning with the Tenth Party Congress, held in August 1973. The new official bodies reflected some reduction in the role of the military which, it will be recalled, grew to massive size in the 1966–69 period. While the role of Chiang Ch'ing—Madame Mao—seemed to be reduced, there emerged a new young official from the more extreme group in Shanghai, Wang Hung-wen, who was elected a Vice Chairman of the Central Committee of the Politburo and made one of the major speeches.

The big event of this Congress was the formal action in condemnation of Lin Piao, who must be seen in political and military roles. This man, who in 1969 was named in the Party Constitution as Mao's closest comrade and designated successor, was now revealed as a bourgeois superspy and as a political plotter so far gone in error as to try to assassinate Chairman Mao and thus begin a return to the hated capitalist system.

There are clear ideological connections between the current anti-Lin and anti-Confucius campaigns. Westerners seem to be most bemused by the latter, since Confucius personifies to so many of them the teacher and model who set the tone for all China for so long a time. On close inspection, we see that the sage's writings pay much attention to the strata of society, the obligations and duties of lesser to superior men, and the general concept of a rigid class structure—all anathema to the Communist purist. Lin and Confucius are linked to major concepts of class, economy, and behavior that Mao wanted attacked, without the embarrassment of questions about Mao's previous sponsorship of Lin Piao.

It is useful also to note that there was praise for the emperor Shih Huang Ti (circa 200 B. C.), who burned the books and buried the scholars alive, a punishment earned by their questioning of authority. More importantly, perhaps, it was Shih Huang Ti also who considerably reduced the power of the provinces and increased that of the center. Shih Huang Ti's role as a historical figure in support of a current political campaign (a favorite tactic of Mao's) seems to have diminished recently in comparison with the part that continues to be played by Confucius.

Some of the present internal action is aimed at officials and cadres who have lost sight of

—WIDE WORLD PHOTOS

Chinese political leaders have developed poster propaganda to an impressive—if not subtle—art. Here, a huge one in Shanghai.

—WIDE WORLD PHOTOS

During PRC's Cultural Revolution in the 1960s, Red Guards assembled to pay homage to their ideological messiah—Mao Tse-tung.

ideology in their pursuit of production goals. There are also attacks on teachers who are the captives of older styles where grades counted, teachers were autocratic disciplinarians, and classroom performance meant more than class origin. The big posters so characteristic of the Cultural Revolution are again appearing, more in some localities than in others. A few of the posters seem to attack personal enemies or particular individuals, but their general thrust is against Confucius and Lin.

In agriculture, the peasants are being urged to press on with the overthrow of old concepts, particularly that of private ownership. The rural leadership that did not learn adequately from the Cultural Revolution are to be dealt with sternly. There is also emphasis on greater political participation by soldiers, workers, and peasants. There is still insistence on the need to move educated young people to rural areas and to operate schools with emphasis on politics and labor, not only on the academic side.

The internal economy of the PRC appears to prosper. Gains in all significant areas are claimed to be substantial. Constant exhortation promotes the virtues of thrift and selflessness, and there is no indication that the Chinese worker is disturbed over his share of the product of his labor. In the external economy, Peking has been described as being on a "worldwide shopping spree" in a search for faster growth by the help of more advanced technology. Japan and the United States enter heavily into this operation. Last year's two-way trade between Japan and the PRC came to some $2 billion—double that of the year before. Two-way trade with the United States in 1973 is estimated to have reached more than $1 billion, compared with $72 million in 1972 and $5 million in 1971. For the first time, Chinese authorities are accepting commercial loans to pay for imports.

Part of the wonder we feel over current Chinese developments is our reaction to unexpected results of increased contact between us. These people, we think, showed good sense in agreeing to relax hostility and enter more into the whole world, but now they are attacking our culture and some of their old friends. Beethoven and Schubert are decadent and bourgeoisie. *Jonathan Livingston Seagull* is a bad book. A documentary film made by the Italian director Antonioni is an attack on the people of China. (Actually, this writer found the film rather low-key and in some places almost sentimental. It did, however, show one of the free markets where peasants sell their

produce from private plots. It did not glorify or emphasize industrial growth and progress.) Owen Lattimore, for years associated with those accused by Sen. Joseph McCarthy and others for the "loss of China," and who visited the mainland as an honored guest of Chou En-lai, has now been revealed as no true friend.

Why and Why Now?

There is a lot of evidence that some peculiar and private quarrel is going on. A number of respected analysts see it as evidence of dissatisfaction in the extreme left with the style of Chou En-lai. He has certainly gotten the major share of attention as the architect of whatever stability, moderation, and international adjustment the PRC has achieved. This is proper, but foreigners must keep in mind that his sophistication and intellectual flexibility are those of a dedicated Communist. He survives and operates in an arena where the internal dialogue is addressed to the nuances of a total Communist system, and not to considerations of the desirability of other political creeds.

It is probably accurate to say that the internal struggle is between the poles of Chinese Communist belief, with tactical advantage and the tools of conflict going now to one, now to another. The situation today may bear reminders of the Cultural Revolution or of earlier events, but it would be misleading simply to label it so. It is an effort dedicated to the protection of "the newborn things" of the earlier struggles—the social and political gains on the road to Mao's brave new world. It is essentially compatible with what has gone before.

Techniques and targets may vary, but the dominance of Mao is still perceptible. It is he who calls the tune; it is he who conducts the orchestra. The concept of the "continuing revolution" may be served in many ways, and it would be wrong to conclude that differences in method do not embody well-thought-out evaluations of experience and careful evaluation of the operational climate.

In seeking to understand the most recent phase in Chinese behavior, we find some interesting differences in the way things are done, particularly in respect to organization and discipline.

First, encouragement to rebellious youth is more temperate. The great hordes of Red Guards, roaming the countryside and "dragging out" officials, are noticeably absent. Current youth heroes are a twelve-year-old girl who dared to reprimand her teacher, and the young man who renounced his chance to enter college because undemocratic influence had figured in his acceptance.

Second, even though backsliding officials and negligent cadres are under attack, nothing like the widespread and indiscriminate actions of 1966–69 are evident. Wrongdoers are often denounced and then returned to duty.

Third, the actual intensity and the style and action seem to vary widely among localities, but, on the average, at lower levels than before.

Fourth, as noted earlier, the People's Liberation Army, which by late 1968 was virtually running the country, seems much less involved in this affair and more concerned with the business of defense.

Finally, there is evidence that Chinese officials are making deliberate efforts to reassure foreigners that there is no major "antiforeign" element in the present activity.

What It Means to Us

Is there then some rational explanation of what we perceive as irrationality? There is, if we remember the fundamental aim of the Maoist canon: the emergence of "socialist man" is the ideal goal and product of civilization.

At the Tenth Party Congress, we were warned that there will be more Lin Piaos, more revolutions—Utopia is not gained without travail. What we see today is another phase in a series of efforts to guide the Chinese nation toward Mao's ultimate model of the good society. It is part of a stream—separate and discrete, but in harmony with the Communist view of the future and how—*in China*—it is to be reached. And this is the way it will go. China will respond to threats to her physical security; China will shape and direct her economy; China will participate in world affairs; China will guide her society—all in her own way.

Mao has told his people that they must despise their enemies strategically and respect them tactically. When it suits Peking's purposes she will accommodate to the degree and in ways that best serve her current perceptions of the situation. There is nothing surprising about this. It is just that, as we said at the beginning, Communist China marches to a different drummer.

We can live with this. All we must do is remember that there are few abiding affinities between us. Pandas and Ping-Pong and a shared belief that no war is better than war can produce some useful new arrangements. What we need to do is remember that today's actions toward us are not to be taken as reductions in a basic and systemic antipathy that each side feels for the other's definition of what constitutes a good world. ■

The Lightweight Fighter: Headed for Production?

BY JOHN L. FRISBEE
EXECUTIVE EDITOR, AIR FORCE MAGAZINE

Body lift developed by the airfoil contour of the YF-16's forward fuselage and strakes extending forward from the wing roots provide excellent maneuverability at high angles of attack. Advanced technologies have saved more than 1,000 pounds in the aircraft's weight.

THE Lightweight Fighter (LWF) Prototype Program under which the General Dynamics YF-16 and Northrop Corp.'s YF-17 have been developed has taken on a new light. On April 29, Secretary of Defense James R. Schlesinger announced that the Pentagon now is seriously considering full-scale development and production of a relatively inexpensive Air Combat Fighter (ACF), using the airframe of either the YF-16 or the YF-17.

Initially, the purpose of the LWF program was simply to investigate new technology that might be appropriate to future US fighter aircraft requirements. With Secretary Schlesinger's announcement, the LWF test program, now under way at Edwards AFB, Calif., assumed more the appearance of a competitive flyoff.

In a letter to congressional leaders, Secretary Schlesinger said that the Air Combat Fighter is envisioned as "a missionized fighter derived from the LWF. . . . The current flight-testing program for both the YF-16 and YF-17 . . . should permit us to select the more promising of these two candidate airframe configurations in FY '75 and to proceed into engineering development in preparation for a possible production decision of an ACF as early as calendar year 1977 or 1978."

Rumors of increasing DoD and Air Force interest in an operational lightweight fighter have been circulating for some time. An obvious reason lies in the high cost of sophisticated weapon systems. The ACF option, according to Secretary Schlesinger, ". . . would permit us to procure and operate a larger number of aircraft within the same budgetary resources. I foresee significant potential for foreign sales of this type of aircraft. . . ." DoD's FY '75 budget request includes a total of $58.7 million for development of a relatively inexpensive fighter—$22.7 million for the LWF and $36 million for the Air Combat Fighter.

The Flight-Test Program

The Lightweight Fighter Program got under way in the spring of 1972, when the Air Force selected General Dynamics' Convair Aerospace Division and Northrop Corp. to design, produce, and flight test two prototypes each. The contractors were allowed to set their own schedules; hence, the YF-16 was rolled out on December 13, 1973, and the YF-17 on April 4, 1974. The first YF-16 began its flight-test program on February 2, 1974, while first flight of the YF-17 was scheduled to take place in late May.

The flight-test program for each aircraft initially was expected to continue over a one-year period, but, because of the difference in roll-out dates of the two prototype designs, not necessarily in parallel. Now, with the likelihood that one of the aircraft will be selected as the basis for a new Air Combat Fighter, some modification of the test program to bring testing of the competitors in parallel is anticipated. That probably will mean extending test flights of the YF-16 beyond the originally expected date and accelerating the YF-17 test program to bring the two in line.

The competitive testing period of both prototypes probably will be completed between January and early spring of 1975. An evaluation then will take place, with source selection likely at that time. Before completion of testing, both

contractors will be asked to submit proposals for production.

The flight-test program as presently designed is conducted by a Joint Test Team composed of contractor and Air Force personnel. The flight-test objectives are accomplished in an integrated program of development testing, aerodynamic and systems evaluation, and operational factors evaluation. Evaluations are the responsibilities of the respective contractors, the Air Force Flight Test Center, and Tactical Air Command. These agencies are under the supervision of the Aeronautical Systems Division of Air Force Systems Command. Although each agency has its primary area of responsibility, the particular disciplines are flown by all pilots of the test team.

Over the entire test program, the three agencies will fly the aircraft about one-third of the time each. The LWF Program Office feels that a more comprehensive evaluation of the two aircraft can be accomplished by having the using command (TAC) participate in the program from the beginning. Inputs from the Flight Test Center and TAC pilots will help the contractors to refine their designs.

During the latter months of the flight-test program, the Air Force YF-16 pilots will fly the YF-17 and vice versa in order to have a larger number of pilots evaluate each model.

Design Differences

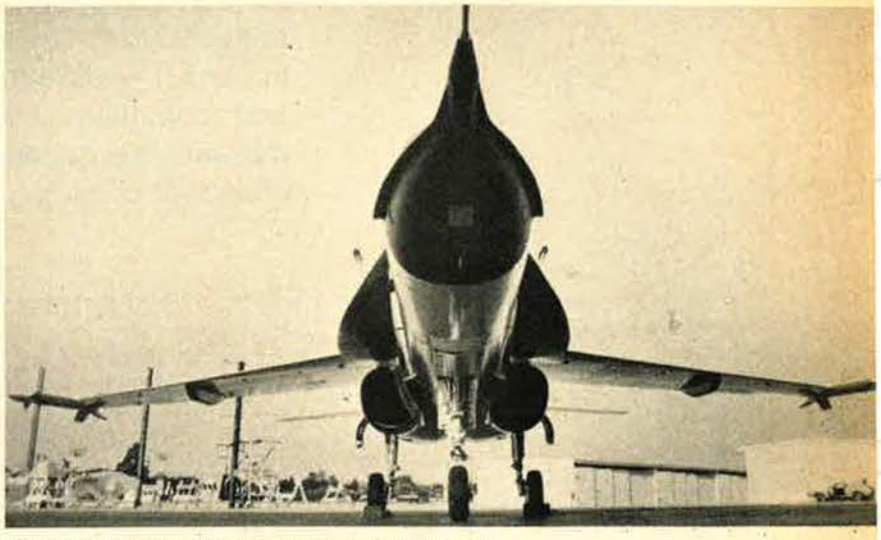
Both aircraft are in the Mach 2.0 class and have been designed with a target cost of $3 million per unit in FY '72 dollars, based on assumed production of 300 aircraft at a rate of eight to ten a month. The contractors have, however, opted for entirely different design approaches, as was appropriate in a program aimed at developing new design concepts and the application of advanced technology. *(For a detailed description of the YF-17, see October '73 issue, and of the YF-16, January '74 issue.)*

The General Dynamics YF-16 is a single-engine fighter, powered by a Pratt & Whitney F100 turbofan engine developed for the F-15. The F100 produces 25,000 pounds of thrust in full afterburner. With a mission weight of 17,500 pounds, the YF-16 has a thrust-to-weight ratio of 1.3:1. General Dynamics claims for its LWF a combat radius about three times that of currently operational first-line fighters and acceleration and turn rates double those of the F-4.

One of the major innovations of the YF-16 is the use of a fly-by-wire flight control system, by which control surfaces are actuated electrically, rather than with mechanical linkages.

The Northrop YF-17 is a twin-tail, twin-engine aircraft, using General Electric YJ101 engines, derived from the engine developed for the B-1. The two engines produce a combined thrust of 30,000 pounds, and, with a takeoff weight of 23,000 pounds, give the YF-17 approximately the same thrust-to-weight ratio as the YF-16.

The hybrid-wing YF-17, which is an outgrowth of Northrop's work on the T-38, F-5A/B, the F-5E, and the P-530 Cobra international fighter design concept, uses about 900 pounds of advanced graphite composites in sixty-four structural components. Fly-by-wire linkages are used for the ailerons, and conventional mechanical linkages for the tail surfaces. The YF-17 is said to be from forty to fifty percent more maneuverable than any other fighter now in operational use.



The YF-17's nose fuselage strakes contribute to control and stability in high-G turns. Slotted and highly swept leading-edge wing extensions improve maneuverability and ensure uninterrupted airflow to the engines at high angles of attack.

While neither aircraft has been developed as a complete weapon system, both will be equipped with an M-61 multibarrel 20-mm cannon and two air-to-air missiles. Both are designed primarily as low-cost, air-superiority fighters.

In the event that either the YF-16 or the YF-17 goes into production, incorporating developmental work done under the Air Force Air Combat Fighter Program, the Air Force high-cost/low-cost mix of tactical fighters could include from 300 to 500 lightweight fighters at some time in the future.

Contractor studies suggest that there may be a foreign market for from 2,000 to 3,000 low-cost fighters by the end of this decade. ■

In recent years, for a variety of reasons, tactical airpower has been used largely for close support and isolation of the battlefield. Now, revolutionary improvements in sensor technology, munitions accuracy, and command control make feasible a dramatically expanded concept for the employment of tactical air forces . . .

TACTICAL COUNTERFORCE

BY MAJ. GEN. LESLIE W. BRAY, JR., USAF (RET.)

A CONCEPT for more fully exploiting the potential of tactical airpower has been developing among Air Force planners for many months. This concept of a new emphasis upon a traditional airpower task has been labeled Tactical Counterforce.

Tactical Counterforce has as its objective the destruction or disruption of major ground forces that threaten, but are not engaged with, friendly ground forces. The targets are enemy firepower elements located beyond the forward edge of the battle area. Because it strikes directly at enemy land forces rather than at lines of communication, Tactical Counterforce differs from current perceptions and from the traditional emphasis of interdiction.

Interdiction and Tactical Counterforce

To place the new concept in perspective, it is important to understand the traditional scope of interdiction and how Tactical Counterforce relates to it. Air interdiction is defined in official publications as "air operations conducted to destroy, neutralize, or delay the enemy's potential before it can be brought to bear against friendly forces, at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required." This definition is broad enough to include almost any tactical air operation that does not require detailed integration with ground forces.

Actually, as it was practiced in World War II, Korea, and Vietnam, interdiction was most closely associated with "isolation of the battlefield." The intent was to reduce or delay the orderly flow of combat consumables and supplies to the front in support of on-line combat units. Isolation of the battlefield also involved the deliberate and methodical cutting of lines of communication so that reinforcing units were delayed or prevented from concentrating at critical points.

Operations *Strangle* and *Diadem* of the Italian Campaign in the spring of 1944 are examples of interdiction in isolation of the battlefield. Because a lull in the ground action allowed the Germans to conserve supplies, air interdiction operations under *Strangle* did not

succeed in "strangling" the enemy forces. But *Strangle's* damage to lines of communication and *Diadem's* subsequent air restrictions to the mobility of German ground forces severely weakened the German armies during the allied ground assault on the Gustav line.

Probably the best known case of battlefield isolation is connected with the Normandy invasion of 1944. The landings there were assured of success, and the rapid drive inland was made possible by the air interdiction campaign before and during the actual invasion. Here, the primary objective was to isolate the land areas from German reinforcing units. The destruction of the German lines of communication in France proved to be the undoing of the German defense.

However, within the broad definition of interdiction, it was possible to conceive another objective entirely different from isolation of the battlefield. And, in the early days of tactical air employment, there *was* another conceptual aspect of interdiction—to strike and damage significant elements of enemy main-force units. A notable example of this was the protection of Patton's flank by tactical air during his drive across France. Another example was "armed reconnaissance" behind enemy lines to look for enemy forces and other targets of opportunity. Tactical aircraft, however, had limited ability to find or "acquire" small, mobile targets on the ground and to strike such targets accurately and effectively. At night or during periods of bad weather, armed reconnaissance seldom resulted in much more than random harassment of enemy forces.

Similar interdiction-type operations were conducted against opposing French ground forces by the Germans in 1940 (and by Israel in the 1967 war), but, in general, such uses of tactical airpower have been rare. Altogether, of the US interdiction sorties flown in Europe in World War II, less than four percent were in direct attack of enemy land forces. Some fifty percent of the sorties were against highways, railways, and bridges, and thirty-four percent against supplies, transporters and supporting defenses, ships and harbors, and miscellaneous targets.

Technological Limitations

Thus, in the aftermath of World War II, perceptions of interdiction clearly emphasized isolation of the battlefield. Some, however, felt that the use of tactical air directly against enemy forces should receive greater conceptual emphasis. Writing in 1948, Lt. Gen. Elwood R. "Pete" Quesada—one of the primary architects of tactical air victory in World War II—suggested in the spring 1948 issue of *Air University Quarterly Review* that an appropriate role for interdiction was "prevention of a hostile [ground] force from engaging in a battle with our surface forces." This perception of the potential for tactical airpower comes very close to the Tactical Counterforce concept.

There was, however, one serious shortcoming with such a concept twenty-five years ago—it was overly ambitious for the capabilities of the time. The limitations of tactical air for finding and striking mobile land targets led to continued emphasis upon isolation of the battlefield in Korea. For the most part, these same limitations continued through the 1960s.

The nature of the geography and the enemy force in Vietnam made small units difficult to find in the dense foliage during the day and almost impossible to locate at night and during bad weather. Furthermore, in the early days of the war, there were severe limitations on the accuracies of munitions to destroy the small personnel-intensive targets. It was logical, then, that the air campaigns should be dedicated to striking the lines of communication through North Vietnam and Laos into South Vietnam.

The primary targets in North Vietnam—bridges, roads, railroads, and supply depots—were fixed and relatively easy to find. Due to the complex air defense environment and political restrictions on collateral damage, the impetus there was to improve the accuracy of munitions. In Laos and South Vietnam, the problem was acquiring the vehicular traffic on the Ho Chi Minh Trail. Emphasis was placed on technology to locate and identify small mobile targets as well as on highly accurate munitions to strike them.

Though focused on the lines of communications, the technological catalyst of Southeast Asia opened the door for new abilities of tactical air to detect, locate, identify, fix, and destroy such small mobile targets as tanks. Yet, because of the emphasis in Vietnam, Korea, and World War II, interdiction today has come to be identified almost solely with reducing the flow of men and materials.

New Capabilities

It appears time to take another look at that tactical air objective devoted to striking enemy ground forces in areas beyond the reach of friendly artillery. The capabilities to exploit General Quesada's ideas are now at hand.

A quick review of some of the more significant technological developments lends credence to this thought. The whole spectrum of signal intelligence techniques, together with side-

looking airborne radar and Time of Arrival/ Distance Measuring Equipment, promises to find and track the movements of ground forces over wide areas. Electro-optical, radar, and infrared sensors promise acquisition of individual targets at night and in bad weather—as well as providing a quantum improvement on clear days. Precision-guided munitions have already demonstrated fantastic single-shot kill probabilities and great effectiveness in striking targets, and this technology is in its infancy.

A combination of these and other new developments places the long-ignored counterforce objective in a new light. Indeed, if airpower can find and strike enemy forces as effectively as is suggested by the new technology, this independent capability should be given marked emphasis. It might well emerge as a significant and perhaps decisive factor for countering enemy land forces in the future.

Tactical Counterforce is an apt name for this renewed concept and function of airpower, where the primary objective is to detect, locate, identify, and destroy or neutralize enemy land forces prior to their engagement with friendly forces. Isolation of the battlefield—interdiction, as it is commonly perceived today—would continue to be another essential function of tactical air. But Tactical Counterforce adds an enlarged dimension to current perceptions of interdiction.

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The Tactical Counterforce Mission in Concept

The primary objective of Tactical Counterforce, as stated earlier, is to destroy, damage, and disrupt enemy ground forces not engaged with friendly land forces so the enemy can no longer use these forces to sustain the momentum of his offensive (or depth of defense). The concept can be applied by tactical airpower against any organized land force. However, since the Warsaw Pact forces comprise one of the most serious conventional threats and possess one of the largest aggregations of firepower in the world, the Tactical Counterforce concept will be explained in the context of a conventional war in Europe.

Warsaw Pact strategy appears to involve great concentrations of armor employed in a short campaign to attack and break through NATO defenses and rapidly seize objectives deep in Western Europe. NATO strategy is designed to slow or halt the Warsaw Pact penetration for a period long enough to confront the Soviet Union with the choice of ending the war or accepting the risk of escalation to nuclear warfare.

Thus, Pact strategy is offensive while NATO strategy is defensive. Indeed, the primary NATO objective is to *deter* attack. A properly structured US Tactical Counterforce capability could make a major contribution to that objective; and, if deterrence fails, it could significantly reduce the momentum of a Pact ground offensive.

The target system envisaged for Tactical Counterforce would consist mainly of enemy armor and artillery deployed forward but not yet engaged by friendly ground forces. It is estimated that the Warsaw Pact would position in the forward area opposite the NATO Central Region an array of divisions organized in two "fronts"—designated as "initial" and "reinforcing."

To facilitate the buildup of the combat power needed for a rapid breakthrough, the maneuvering units of the initial fronts would be organized in successive echelons, or groupings, arranged in depth. The initial assault might be launched by groups of two or three tank divisions concentrated on relatively narrow sectors. These spearhead divisions may be viewed as the cutting edge of a wedge, with the divisions in the follow-on echelons of the initial fronts constituting the real driving force of the wedge. The reinforcing fronts would be located well behind the initial fronts and in position to augment the main effort or to exploit a breakthrough in a separate sector.

It might be possible to use Tactical Counterforce against the fast-moving spearhead units before they came into contact with the friendly ground forces, but this is likely to be a brief, transitory phase. In the later and continuing stages of the attack, the spearhead units would be operating within the reach of friendly ground forces; air attacks against these units would fall within the purview of close air support. But the bulk of the Warsaw Pact forces (the driving part of the wedge) would be deployed beyond the reach of friendly ground forces and outside the area covered by close air support. If a large number of these elements of enemy firepower (tanks, artillery, personnel carriers) could be rapidly attrited by Tactical Counterforce, the momentum of the attack would be blunted. Friendly ground forces, with close air support, could cope much more easily with the reduced pressures exerted by the spearhead and residual forces, thus significantly improving the prospects of halting the attack.

The target system for Tactical Counterforce could also include the reinforcing fronts not yet committed to a specific point of attack. The destruction of these forces would usually have a lower priority than the destruction of the initial front units, particularly in the early days or weeks of the war.

To be most effective against such a target system, Tactical Counterforce would be dependent upon the new technologies already discussed. And, of course, operations would be heavily dependent on the support of other air missions, particularly reconnaissance and counterair. Furthermore, Tactical Counterforce sorties would be interchangeable with close air support and interdiction sorties in the sense that all three are concerned with attack on ground targets and, in general, employ attack/strike-type aircraft.

Feasibility of the Concept

The ability of airpower to detect, acquire, and strike targets of all kinds has increased significantly in recent years. The Tactical Counterforce concept is feasible today. It is less clear what precise degree of effectiveness the concept would have in the near term or what further improvements might be attainable in the longer term. The Warsaw Pact threat will again be used to examine the future feasibility of the concept.

The effectiveness of the Tactical Counterforce concept in Europe is dependent on an ability to concentrate sorties in a relatively short period of time on an enemy main ground-force attack. This could involve several dozen divisions employing thousands of tanks. A recent study suggests that a relatively modest force of attack aircraft, flying under daylight visual conditions and carrying guns plus Maverick or Rockeye air-to-ground missiles, would have a kill potential of almost half the tanks over a five-day period. Even if one takes a very conservative view of such studies, they clearly indicate that Tactical Counterforce operations could have a major impact against armored forces in the near term.

Laser, infrared, or low-light-level TV-guided bombs could be used on clear nights against hard targets if their location is known. Although an improved all-weather capability is needed, programmed capabilities could be quite effective in slowing or halting a ground-force attack.

Information-gathering systems also are needed to detect Tactical Counterforce targets to a depth of several hundred kilometers. These needs would expand as expectations increase for Tactical Counterforce effectiveness and as the scenario becomes less "target rich." Reconnaissance platforms available today, consisting of RF-4s, RF-101s, and a small drone capability, can cover the area of interest. Also, the SR-71 could make a valuable contribution, particularly for high-altitude/wide-area coverage. For the near term, studies indicate that a more advanced drone system might add significantly to the capabilities of the reconnaissance force.

The command and control structure used for other tactical air missions would also be used for Tactical Counterforce. Desirable improvements are being made, even without emphasis on the concept. However, as advances are made in target acquisition and strike capabilities for Tactical Counterforce, there will be an even larger payoff in the coordination and integration of these functions within a centralized command and control system.

The Longer-Term Future

It is generally accepted that large-scale destruction of armor and artillery can have a decisive impact on a massive attack such as might occur in Western Europe. Military firepower is organized into cohesive units: If a unit's cohesiveness is lost, the effectiveness of the firepower elements decreases rapidly. Thus, one can conclude that it may not be necessary to destroy *all* individual elements of firepower in a division. It may be necessary only to shatter the division's cohesiveness by destroying a particular level of its essential elements of firepower.

For example, if enemy practice is to withdraw a tank division from combat when half of its tanks become inoperative, as is believed to be the case, then the damage criterion for a tank division would be fifty percent of its tanks. Once the planned degree of damage had been inflicted on a particular unit, attention could be shifted to another unit until enough units had been put out of action to halt the momentum of the attack.

An ability to practice economy of force as pictured above may well be the ultimate in Tactical Counterforce. This capability is not at hand. However, there are accelerating developments in the technology needed to track organized units and to locate and strike specific targets in near real time, around the clock. Such operations may be a practical goal for the longer term.

This ultimate goal will be feasible if we are successful in developing a large-area, all-weather target acquisition and strike system. Air-delivered weapons might be launched well beyond the range of terminal defenses and with sufficient payload and accuracy to destroy such hard targets as tanks and armored personnel carriers. But it would not be necessary for all weapons to have standoff, hard-target, or all-weather capabilities; there will always be some soft targets, as well as many periods of good weather, in the Tactical Counterforce area of operations.

Policy Considerations

The Tactical Counterforce concept is consistent with current national security policies. For instance, one of the Nixon Doctrine's major tenets is that America's friends and allies will be expected to provide the ground forces for defense against conventional attack. The US will assist with air and naval forces. A US Tactical Counterforce capability would be most appropriate and effective in this context.

It would be logical for the US contribution to NATO to be heavily weighted in favor of airpower in general and Tactical Counterforce in particular. Furthermore, to the extent that mutual and balanced force reduction in Europe might result in reductions of *total* military personnel, the loss of in-place ground forces could be offset to some extent by a rapidly deployable Tactical Counterforce capability.

At home, the American people have traditionally placed high value on human life, and have been willing to pay a premium to reduce US casualties in combat. Tactical Counterforce, by seeking to prevent enemy engagements with friendly ground forces and by helping reduce the number of US personnel at risk, promises to hold US casualties in a future war below the level that otherwise might be expected.

The Tactical Counterforce concept, at this stage of its development, appears to be both desirable and operationally feasible. While a more comprehensive analysis of its technical and economic feasibility is in order, the concept appears to have sufficient merit to warrant serious consideration. ■

THE WEEK THE US ALMOST WENT TO THE DOGS

Ominous forebodings surrounded the fourth inauguration of Franklin D. Roosevelt on January 20, 1945. A day or two before, a story broke in the press about Blaze, Faye Emerson's mastiff, shipped from London to Hollywood via Air Transport Command on an A-1 Priority by order of Col. Elliott Roosevelt, her fiancé. Three GIs coming home on leave from combat were offloaded in Memphis, Tenn., while the dog, made comfortable in his large wooden crate, was flown through.

The buck stopped right at the desk of General of the Army H. H. "Hap" Arnold, just three weeks a five-star, but he was unable to address the problem as he had suffered a massive heart attack about forty-eight hours after the disclosure and was whisked off to Coral Gables, Fla., to recover. As we know, Maj. Gen. Larry Kuter was hurriedly substituted for Arnold at the climactic Yalta Conferences scheduled to begin a week later.

It remained for Lt. Gen. Barney Giles, Chief of Air Staff, and Robert A. Lovett, Assistant Secretary of War for Air, to step into the breach, investigate the Blaze incident, which turned out to be true, and to cope with the barrage of letters and telegrams denouncing the Roosevelts, Blaze, the Army Air Forces, and all of its works.

As if to take some of the sting out of the succession of public-relations mishaps, the White House issued a sideways announcement that Fala, the President's dog, had taken unto himself a mate, and would be out of public view for a discreet honeymoon. It didn't quite work out as planned, as reported by Mr. Lovett in a situation report to Gen. Carl "Tooey" Spaatz under date of February 12, 1945:

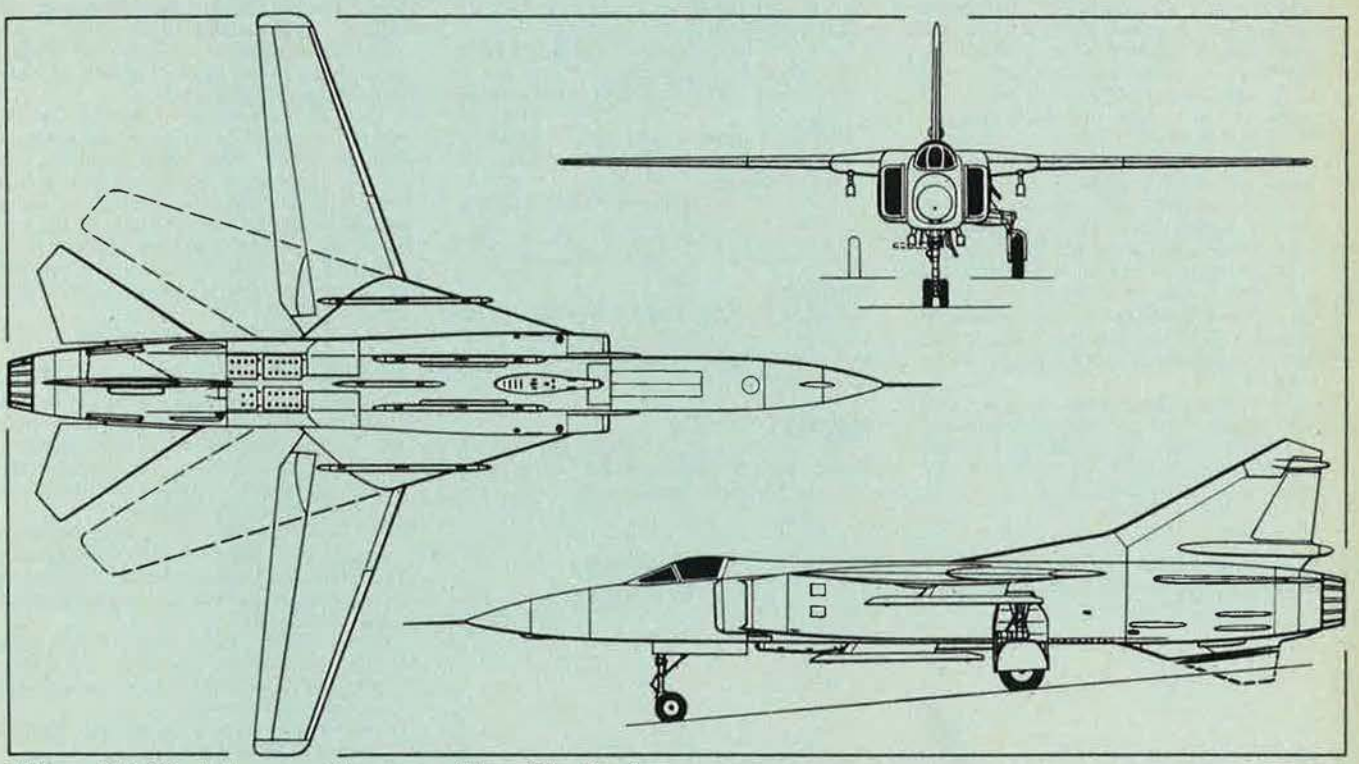
> These past few weeks have been uncommonly busy for a variety of reasons ranging all the way from Elliott's dog to the Tri-Partite Conference. In spite of numerous suggestions from the outside, we have declined so far to change the name of the ATC to the Animal Transport Command, and the hearing on the dog incident which was held several days ago went off with considerable precision and was well handled.
>
> You have probably been advised by now that there has been other canine difficulty in the White House. Mrs. Roosevelt announced that Fala had been sent away on a wedding trip, and, naturally, the country held its breath awaiting further details. Much to the sorrow and concern of a sympathetic public, the news leaked out last week that Fala was resting comfortably at Walter Reed Hospital under the care of a veterinarian after a most unhappy honeymoon incident. The young lady of his choice was, according to the press, told that Fala was the most eligible bachelor in dogdom. She appears to have been more emotional than intelligent, and she became confused by the word "eligible" and thought it was "edible." Whereupon, she turned on Fala and bit him in an extremely sensitive spot, which makes further honeymoons debatable, to say the least.

—Contributed by Dr. Murray Green

(AIR FORCE *Magazine will pay $10 for each anecdote accepted for publication.)*

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



Mikoyan MiG-23B single-seat variable-geometry fighter (Pilot Press)

MIKOYAN
ARTEM I. MIKOYAN DESIGN BUREAU; USSR

MIKOYAN MiG-23
NATO Code Name: "Flogger"

Since the prototype of this variable-geometry fighter was first displayed in public during the 1967 Aviation Day flypast at Domodedovo Airport, Moscow, the design has undergone considerable development. Initial deliveries to the Soviet Air Force are believed to have been made in 1971; but problems encountered subsequently prevented the type from becoming fully operational until early 1972. Since then, large numbers of MiG-23s have been deployed, and two Soviet fighter regiments, equipped with a total of about 75 aircraft, are reported to be based in East Germany.

There appear to be three versions of which details can be published:

MiG-23 ("Flogger-A"). Original version, of which prototype was shown at Domodedovo on 9 July 1967. On that occasion, during a display by test pilot Alexander Fedotov, the wings were moved from fully-forward to fully-swept position in about four seconds. The commentator credited the aircraft with supersonic speed at ground level and Mach 2 at medium and high altitudes. Illustrated in 1973–74 *Jane's*.

MiG-23B ("Flogger-B"). Standard version in current operational service, as described and illustrated. Design changes compared with prototype include movement further rearward of all tail surfaces, and the introduction of fixed inboard wing leading-edges.

MiG-23U. Tandem two-seat version suitable for both operational training and combat use. Individual canopy over each seat. Rear seat slightly higher than forward seat,

with retractable periscopic sight for occupant. Dorsal fairing of increased depth aft of rear canopy, and much enlarged dorsal fin. In service.

The following description refers specifically to the single-seat MiG-23B, but is generally applicable also to the two-seat MiG-23U:

TYPE: Single-seat variable-geometry tactical fighter.

WINGS: Cantilever shoulder wing. Sweepback of main panels variable in flight or on the ground from approximately 21° to approximately 71°. Fixed triangular inboard panels, with leading-edges swept at approximately 71°. Full-span trailing-edge single-slotted flaps, each in two sections, permitting independent actuation of outboard sections when wings are fully swept. Likely installation of top-surface spoilers/lift dumpers forward of flaps, for differential operation in conjunction with horizontal tail surfaces, and for collective operation for improved runway adherence and braking after touchdown. Leading-edge flap on outboard two-thirds of each main (variable-geometry) panel.

FUSELAGE: Conventional semi-monocoque structure of basic circular section; flattened on each side of cockpit, forward of lateral air intake trunks which blend into circular shape of rear fuselage. Large flat boundary layer splitter plate (similar to that of US F-4 Phantom II) forms inboard face of each intake. Two small rectangular "blow-in" air intakes in each trunk, under inboard wing leading-edge. Perforations under rear fuselage, aft of main wheel bays, are probably gas or air vents, as a door-type airbrake is mounted on each side of rear fuselage.

TAIL UNIT: All-moving horizontal surfaces, swept back at approximately 57°, operate both differentially and symmetrically to provide aileron and elevator function respectively. Conventional fin, swept back at approximately 65°, with large dorsal fin and inset rudder. No tabs. Large ventral fin in two portions. Lower portion is hinged to fold to starboard when landing gear is extended, to increase ground clearance.

LANDING GEAR: Retractable tricycle type, with single wheel on each main unit and twin-wheel nose unit. Main units retract inward into rear of air intake trunks. Nose unit, fitted with small mudguard, retracts rearward. Brake parachute housed in cylindrical fairing at base of rudder.

POWER PLANT: One large afterburning turbojet engine of unknown type. Thrust has been estimated at 14,330 lb (6,500 kg) st dry and 20,500 lb (9,300 kg) st with afterburning. Provision for carrying external fuel tank on underfuselage centreline pylon.

ACCOMMODATION: Single seat in air-conditioned cockpit, under small sideways-hinged canopy.

ELECTRONICS AND EQUIPMENT: Radar dish behind dielectric nose-cone. Small cylindrical fairings forward of starboard underwing pylon and above rudder are believed to contain ECM equipment. Dr Robert C. Seamans, then US Secretary of the Air Force, stated his belief in early 1973 that the radar and missile systems are comparable with those of the USAF's F-4 Phantom II. Retractable landing light under nose, aft of radome.

ARMAMENT: One twin-barrel gun, of unknown calibre, in fuselage belly pack, with small blister fairing around nozzles. Two pylons under centre fuselage, and one under each fixed inboard wing panel, for external stores of unknown types.

DIMENSIONS (estimated):
Wing span:
fully spread 46 ft 9 in (14.25 m)
fully swept 26 ft 9½ in (8.17 m)
Length overall 55 ft 1½ in (16.80 m)

WEIGHT (estimated):
Take-off weight
28,000–33,050 lb (12,700–15,000 kg)

PERFORMANCE (estimated):
Max level speed at height with external stores Mach 2.3
Max level speed at S/L Mach 1.1
Service ceiling 59,000 ft (18,000 m)
Combat radius
520 nm (600 miles; 960 km)

SIKORSKY

SIKORSKY AIRCRAFT, DIVISION OF UNITED AIRCRAFT CORPORATION; Head Office and Works: Stratford, Connecticut 06602, USA

SIKORSKY YCH-53E

The Sikorsky S-65A, which has the US Navy and US Marine Corps designations of CH-53A and CH-53D respectively, was chosen in early 1973 for development with a three-engined power plant to provide these two services with a heavy-duty multi-purpose helicopter. Development was initiated with the award by the US Navy of a $1.7 million cost-plus-fixed-fee contract; in May 1973 Sikorsky announced that construction of two prototypes was to go ahead, with the objective of a first flight in April 1974. Bettering this by a month, the first of these two helicopters, with the designation YCH-53E, made a successful half-hour flight on 1 March 1974, during which low altitude hovering and limited manoeuvres were carried out.

Currently the largest and most powerful helicopters built in the West, the two prototypes will be used for preliminary evaluation and testing under Phase I of the development programme. Phase II, contingent upon successful completion of Phase I, calls for the construction of a static test vehicle and two pre-production prototypes, embodying changes or modifications evolving from Phase I. It is unlikely that a production decision will be made before early 1976.

It is anticipated that the CH-53E will have double the lift capability of the CH-53A/Ds in service, being able to carry a 16 ton external load over a radius of 50 nm (57.5 miles; 92.5 km) at sea level in air temperatures up to 90°F (32.2°C), or up to 18 tons over shorter distances. Other features of the new helicopter will include extended-range fuel tanks, flight-refuelling capability, on-board all-weather navigation system, and an advanced automatic flight control system.

The US Navy plans to use the CH-53E for vertical on-board delivery operations, to support mobile construction battalions, and for the removal of battle-damaged aircraft from carrier decks. In amphibious operations, it would be able to airlift 93 per cent of a US Marine division's combat items, and would be able to retrieve 98 per cent of the Marine Corps' tactical aircraft without disassembly.

TYPE: Triple-turbine heavy-duty multi-purpose helicopter.

ROTOR SYSTEM AND TRANSMISSION: Seven-blade main rotor, with blades of titanium construction. Titanium and steel main rotor head. Four-blade tail rotor mounted on pylon canted 20° to port. Rotor transmission rated at 13,500 shp for 10 seconds, 11,570 shp for 30 minutes.

FUSELAGE: Conventional semi-monocoque structure of light alloy, steel, and titanium.

TAIL SURFACE: Large-span fixed tailplane on undersurface of fuselage, directly beneath tail rotor pylon.

LANDING GEAR: Retractable tricycle type, with twin wheels on each unit. Main units retract into the rear of sponsons on each side of fuselage.

POWER PLANT: Three 4,380 shp General Electric T64-GE-415 turboshaft engines.

ACCOMMODATION: Crew of three. Main cabin will accommodate up to 56 troops in a high-density seating arrangement.

DIMENSIONS, EXTERNAL:
Main rotor diameter 79 ft 0 in (24.08 m)
Tail rotor diameter 20 ft 0 in (6.10 m)

PERFORMANCE (estimated):
Cruising speed
170 knots (196 mph; 315 km/h)

The three-engined Sikorsky YCH-53E prototype heavy-lift helicopter, photographed during its first flight, with landing gear extended

AIDC/CAF

AERO INDUSTRY DEVELOPMENT CENTER—CHINESE AIR FORCE; Address: PO Box 7173, Taichung, Taiwan 400

The Aero Industry Development Center, established on 1 July 1969, continues to

AIDC XT-CH-1A prototype secondary trainer (1,450 ehp Lycoming T53-L-701 turboprop engine)

The AIDC XT-CH-1A is a tandem two-seat secondary trainer. The first one flew on 23 November 1973

produce under licence a modified version of the US Pazmany PL-1 known as the PL-1B Chienshou (long life) as a primary trainer for the Chinese Nationalist Air Force. It is currently involved also in the licence production of a total of 74 Bell UH-1H helicopters for the Chinese Army, and has completed preparations for licence production in Taiwan of the Northrop F-5E Tiger II combat aircraft.

In 1973, the AIDC completed and flew the first prototype of the XT-CH-1 secondary trainer, an indigenous design which appears to owe much to the North American T-28.

AIDC XT-CH-1

This aircraft is a tandem two-seat secondary trainer, the design of which was started by AIDC in November 1970. Two prototypes were ordered, designated XT-CH-1A and XT-CH-1B; construction began in January 1972.

The first aircraft was completed in September 1973, and was flown for the first time on 23 November 1973. In early 1974 it was undergoing an extensive flight test programme. The second (XT-CH-1B) aircraft, which is a modified version of the XT-CH-1A, is under construction and is scheduled for completion by the end of 1974.

The following description applies to the XT-CH-1A:

TYPE: Turboprop-powered secondary trainer.

WINGS: Cantilever low-wing monoplane. Wing section NACA 64-2A215 (constant). Dihedral 8° from roots. Incidence 2°. No sweepback. Conventional aluminium alloy stressed-skin structure, with aluminium alloy ailerons and slotted trailing-edge flaps. Link-balance type trim tab in each aileron.

FUSELAGE: Conventional semi-monocoque structure of aluminium alloy.

TAIL UNIT: Cantilever aluminium alloy structure, with fixed-incidence tailplane. Dorsal fin. Link-balance type trim tabs in rudder and each elevator.

LANDING GEAR: Retractable tricycle type. Hydraulic retraction, main wheels inward into wings, nosewheel rearward. Telescopic shock-absorbers. Goodyear brakes. Small tail bumper under rear fuselage.

POWER PLANT: One 1,450 ehp Lycoming T53-L-701 turboprop engine, driving a Hamilton Standard 53C51-27 three-blade metal propeller with spinner. Fuel in two tanks in each wing and one in fuselage, with total capacity of 255 US gallons (212 Imp gallons; 963 litres). Oil capacity 8 US gallons (6.6 Imp gallons; 30 litres).

ACCOMMODATION: Crew of two in tandem. Separate rearward-sliding fully-transparent canopy over each cockpit. Cockpits heated and ventilated.

SYSTEMS: Midland-Ross Corporation heating and ventilating system. 115V 300A system provides AC electrical power at 250VA 400Hz. 28V DC system includes 24V 34Ah battery. Oxygen bottle with volume of 2,100 cu in (3.5 litres).

ELECTRONICS AND EQUIPMENT: Collins AN/ARC-51BX UHF radio and Collins AN/ARN-83 ADF.

DIMENSIONS, EXTERNAL:

Wing span	40 ft 0 in (12.19 m)
Wing chord at root	8 ft 0 in (2.44 m)
Wing chord at tip	5 ft 0 in (1.52 m)
Wing aspect ratio	6
Length overall	33 ft 8 in (10.26 m)
Height overall	12 ft 0 in (3.66 m)
Tailplane span	16 ft 0 in (4.88 m)
Wheel track	12 ft 8 in (3.86 m)
Wheelbase	7 ft 10 in (2.39 m)
Propeller diameter	10 ft 0 in (3.05 m)
Propeller ground clearance	2 ft 5 in (0.74 m)

AREAS:

Wings, gross	271.0 sq ft (25.18 m²)
Ailerons (total)	26.0 sq ft (2.42 m²)
Flaps (total)	54.0 sq ft (5.02 m²)
Fin	18.0 sq ft (1.67 m²)
Rudder, incl tab	12.0 sq ft (1.11 m²)
Elevators, incl tabs	16.0 sq ft (1.49 m²)

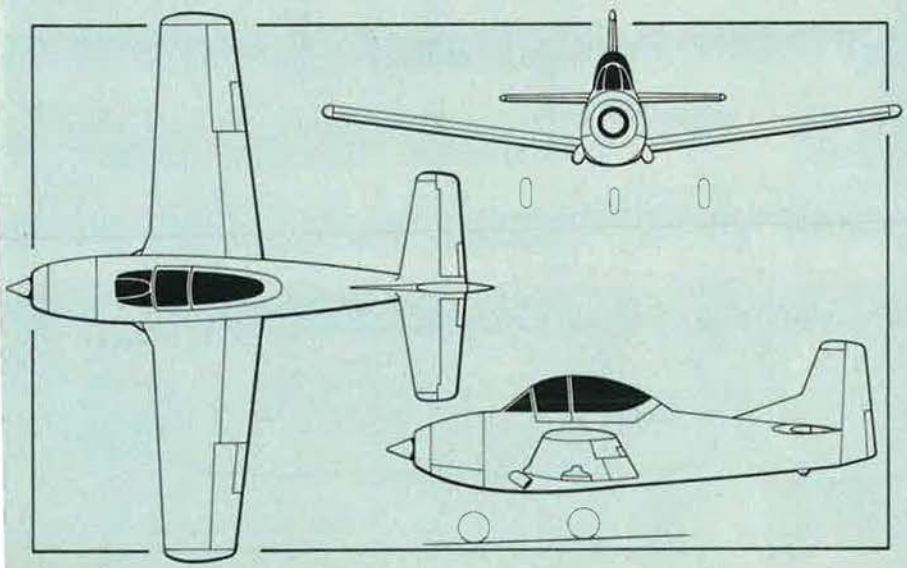
WEIGHTS AND LOADINGS:

Weight empty, equipped	7,250 lb (3,288 kg)
Max T-O weight	9,200 lb (4,173 kg)
Max landing weight	7,050 lb (3,197 kg)
Max wing loading	34.0 lb/sq ft (166 kg/m²)
Max power loading	6.34 lb/ehp (2.88 kg/ehp)

PERFORMANCE (at AUW of 7,600 lb; 3,447 kg):

Max never-exceed speed	370 knots (426 mph; 685 km/h)
Max level speed at 15,000 ft (4,570 m)	320 knots (368 mph; 592 km/h)
Max cruising speed at 15,000 ft (4,570 m)	220 knots (253 mph; 407 km/h)
Econ cruising speed at 15,000 ft (4,570 m)	170 knots (196 mph; 315 km/h)
Stalling speed	50 knots (58 mph; 93 km/h)
Max rate of climb at S/L	3,400 ft (1,036 m)/min
Service ceiling	32,000 ft (9,755 m)
T-O run	800 ft (244 m)
T-O to 50 ft (15 m)	1,100 ft (335 m)
Landing from 50 ft (15 m)	1,300 ft (396 m)
Landing run	900 ft (274 m)
Range with max fuel	1,085 nm (1,250 miles; 2,010 km)

AIDC XT-CH-1A tandem two-seat turboprop-powered trainer (Michael Badrocke)



GRUMMAN

GRUMMAN AEROSPACE CORPORATION; Head Office and Works: Bethpage, New York 11714, USA

GRUMMAN HAWKEYE
US Navy designation: E-2

The E-2 Hawkeye was evolved as a carrier-based early-warning aircraft, but is suitable also for land-based operations from unimproved fields. The prototype flew for the first time on 21 October 1960, since when the following versions have been built:

E-2A (formerly W2F-1). Initial production version, the first of which, equipped with full early-warning and command electronics system, flew on 19 April 1961. Delivery to the US Navy began officially on 19 January 1964, when the first Hawkeye

was accepted at San Diego for training of air and ground crews of airborne early-warning squadron VAW-11. This unit became operational on USS *Kitty Hawk* in 1965. Second Hawkeye unit was VAW-12.

E-2B. The prototype of this version flew for the first time on 20 February 1969. It differs from the E-2A by having a Litton Industries L-304 microelectronic general-purpose computer. A retrofit programme, completed in December 1971, updated all operational E-2As to E-2B standard.

E-2C. First of two E-2C prototypes flew on 20 January 1971. Production began in mid-1971, and eleven were scheduled for delivery in 1973, with a further eight in 1974. The E-2C utilises an advanced form of Grumman/General Electric-developed radar that is capable of detecting airborne targets in a land-clutter environment. Improvements for increased reliability and easier maintenance have been provided.

Teams of Hawkeyes are able to maintain patrols on naval task force defence perimeters in all weathers, and are capable of detecting and assessing any threat from approaching high-Mach-number enemy aircraft early enough to ensure successful interception. To make this possible, highly sophisticated equipment is carried by the aircraft, including a Randtron Systems AN/APA-171 antenna system housed in a 24 ft (7.32 m) diameter saucer-shaped rotodome mounted above the rear fuselage of the aircraft. The rotodome revolves in flight at 6 rpm and can be lowered 1 ft 10¼ in (0.56 m) to facilitate aircraft stowage on board ship. The Yagi type radar arrays within the rotodome are interfaced to the on-board electronic systems, providing radar sum and difference signals plus IFF.

Major detection capability stems from the General Electric AN/APS-120 radar and OL-93/AP radar detector processor (RDP). The radar is able to spot distant airborne targets despite heavy sea or land echo "clutter", as well as surface targets. It is linked to the tracking and intercept computer via the RDP, which carries out automatic detection, and signals target reports which the computer needs for automatic tracking.

To provide the Combat Information Center (CIC) staff with the essential man/machine interface, the Hazeltine Corporation's AN/APA-172 control indicator group consists of three identical display stations, each with a 10 in (25.4 cm) main and a 5 in (12.7 cm) auxiliary display. The main display shows target track information, while the auxiliary provides alpha-numeric information with random-write capability. Station controls allow each of the three CIC operators to select specific information for their displays, as well as to modify the display independently so as to provide each with a different perspective on a particular situation. Other Hazeltine equipment includes an OL-76/AP IFF/ECM detector processor, providing automatic Mk X SIF processing capability in a single integrated system. Signals generated by the OL-76/AP enable the CIC operators to obtain instant range, azimuth, and altitude positions of a friendly target. In order to identify that target as friend or foe, an RT-988/A IFF interrogator "challenges" and identifies the aircraft, feeding its information direct to the OL-76/AP for processing.

Grumman E-2C Hawkeye airborne early-warning aircraft (two 4,910 ehp Allison T56-A-422 turboprop engines)

Accurate navigation is critical for an aircraft which, after hours on patrol, needs to find without delay its mobile carrier base. Such a requirement is catered for by Litton Industries' AN/ASN-92 (LN-15C) carrier aircraft inertial navigation system (CAINS), an important feature being its capability of rapid alignment and orientation following take-off from a rolling and pitching carrier deck. Litton's Amecom division's AN/ALR-59 passive detection system provides early-warning capability. Able to capture short-duration signals in real time, its four-band simultaneous coverage ensures highly-accurate direction finding, even in an environment cluttered with enemy signals.

Linking all this advanced equipment is Litton Data Systems division's L-304 computer, which processes radar, Link 4 and Link 11 communications, navigation, and passive detection data in real time. It comprises two L-304 processors, eight 8,192-word memory units (expandable to ten), power supplies, a recorder producer, power converter, system test module, a 4,096-word refresh memory for the displays, input/output buffers for each function, plus display, radar, navigation, communications, and passive detection converter modules.

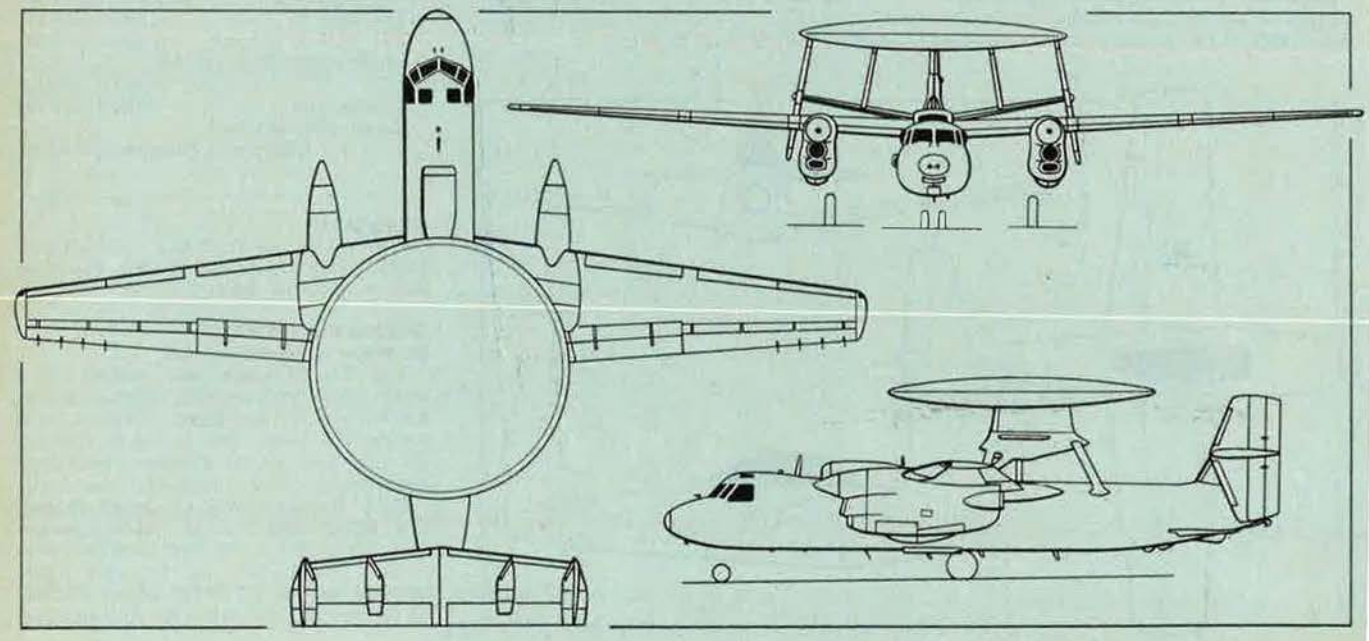
In addition to the L-304 computer, the E-2C has also a Conrac Corporation CP-1085/AS air data computer (ADC). Combining solid-state pressure transducers with a special preprogrammed digital computer, it provides outputs of altitude, altitude hold, indicated air speed, true air speed, and Mach number in analogue and digital format to interface with the navigation, flight control, and display subsystems.

The following details apply to the E-2C Hawkeye:

TYPE: Airborne early-warning aircraft.

WINGS: Cantilever high-wing monoplane of all-metal construction. Centre-section is a structural box consisting of three beams,

Grumman E-2C Hawkeye twin-turboprop airborne early-warning aircraft (Pilot Press)



ribs, and machined skins. Hinged leading-edge is non-structural and provides access to flying and engine controls. The outer panels fold rearward about skewed axis-hinge fittings mounted on the rear beams, to stow parallel with the rear fuselage on each side. Folding is done through a double-acting hydraulic cylinder. Trailing-edges of outer panels and part of centre-section consist of long-span ailerons and hydraulically-actuated Fowler flaps. When flaps are lowered, ailerons are drooped automatically. All control surfaces of E-2C are power-operated and incorporate devices to produce artificial feel forces. Automatic flight control system (AFCS) can be assigned sole control of the system hydraulic actuators, or AFCS signals can be superimposed on the pilot's mechanical inputs for stability augmentation. Pneumatically-inflated rubber de-icing boots on leading-edges.

FUSELAGE: Conventional all-metal semi-monocoque structure.

TAIL UNIT: Cantilever structure, with four fins and three double-hinged rudders. Tailplane dihedral 11°. Portions of tail unit made of glassfibre to reduce radar reflection. Power control and artificial feel systems as for ailerons. Pneumatically-inflated rubber de-icing boots on all leading-edges.

LANDING GEAR: Hydraulically-retractable tricycle type. Pneumatic emergency extension. Steerable nosewheel unit retracts rearward. Main wheels retract forward, and rotate to lie flat in bottom of nacelles. Twin wheels on nose unit only. Oleo-pneumatic shock-absorbers. Main-wheel tyres size 36 x 11 Type VII 24-ply, pressure 260 lb/sq in (18.28 kg/cm²) on ship, 210 lb/sq in (14.76 kg/cm²) ashore. Hydraulic brakes. Hydraulically-operated retractable tailskid. A-frame arrester hook under tail.

POWER PLANT: Two 4,910 ehp Allison T56-A-422 turboprop engines, driving Aeroproducts N41 four-blade fully-feathering reversible-pitch constant-speed propellers. Spinners and blade cuffs incorporate electrical anti-icers.

ACCOMMODATION: Crew of five on flight deck and in ATDS compartment in main cabin, consisting of pilot, co-pilot, combat information centre officer, air control officer, and radar operator. Downward-hinged door, with built-in steps, on port side of centre fuselage.

ELECTRONICS: AN/APA-171 rotodome and antenna, AN/APS-120 search radar, OL-93/AP radar detector processor, AN/APA-172 control indicator group, OL-76/AP IFF/ECM detector processor, RT-988/A IFF interrogator, AN/ASN-92 (LN-15C) CAINS carrier aircraft inertial navigation system, AN/ALR-59 passive detection system, L-304 airborne computer, OL-77/ASQ computer programmer, CP-1085/AS air data computer (ADC), ARC-158 UHF data link, ARQ-34 HF data link, ASM-440 in-flight performance monitor, ARC-51A UHF communications, ARQ-34 HF communications, AIC-14A intercom, APN-153(V) Doppler, ASN-50 heading and attitude reference system, TACAN, ARA-50 UHF ADF, ASW-25B ACLS, and APN-171(V) radar altimeter.

DIMENSIONS, EXTERNAL:

Wing span	80 ft 7 in (24.56 m)
Length overall	57 ft 7 in (17.55 m)
Height overall	18 ft 4 in (5.59 m)
Diameter of rotodome	24 ft 0 in (7.32 m)
Propeller diameter	13 ft 6 in (4.11 m)

AREA:

Wings, gross	700 sq ft (65.03 m²)

WEIGHTS:

Weight empty	37,678 lb (17,090 kg)
Max fuel (internal)	12,400 lb (5,624 kg)
Max T-O weight	51,569 lb (23,391 kg)

PERFORMANCE (at max T-O weight):

Max level speed	325 knots (374 mph; 602 km/h)
Cruising speed	269 knots (310 mph; 499 km/h)
Stalling speed (landing configuration)	71 knots (82 mph; 132 km/h)
Service ceiling	30,800 ft (9,390 m)
T-O run	1,890 ft (576 m)
T-O to 50 ft (15 m)	2,520 ft (768 m)
Ferry range	1,394 nm (1,605 miles; 2,583 km)

LAS/McDonnell Douglas A-4S Skyhawk fighter-bomber (Wright J65-W-20 turbojet engine)

First of eight McDonnell Douglas A-4S Skyhawk fighter-bombers refurbished and modified for Singapore Air Defence Command by LAS at Ontario, California. Another 32 are being produced in Singapore

LAS

LOCKHEED AIRCRAFT SERVICE COMPANY (Division of Lockheed Aircraft Corporation); Head Office and Works: Ontario International Airport, Ontario, California 91761, USA

LAS/MCDONNELL DOUGLAS A-4S SKYHAWK CONVERSION

Expansion of the Singapore Air Defence Command's operational element began in mid-1972 when 40 ex-United States Navy McDonnell Douglas A-4B Skyhawks were ordered, these being taken from storage at Davis-Monthan Air Force Base in Arizona. The first eight were sent to the LAS works at Ontario for the embodiment of more than 100 modifications; they were also refurbished, repaired as necessary, and received a full inspection of the entire airframe. First flight of an A-4S took place on 14 July 1973.

The remaining 32 aircraft were dismantled at Davis-Monthan AFB for shipment direct to Singapore, where they were to be refurbished and equipped to A-4S standard at the LAS facility on the island. The first five aircraft to be modified in Singapore were being worked on in mid-February 1974.

An extensively modified version of the A-4B (formerly A4D-2), the A-4S has improved electronics, weapon delivery capability, and performance, making it comparable with present-generation aircraft. Primary changes include the addition of split wing spoilers above the flaps, a braking parachute canister beneath the aft fuselage, a longer nose to house advanced electronic equipment of British origin, so that the aircraft will be compatible with Singapore ADC's Hawker Hunters, and replacement of the two 20 mm guns in the wing roots by 30 mm Aden cannon. The newly installed equipment includes a Ferranti lightweight lead-computing gunsight, and solid-state electronics packages for the com-

munications, radio, and navigation systems. The cockpit has been completely redesigned to accommodate the new instrumentation and control boxes; and the original 7,700 lb (3,493 kg) st Wright J65-W-16A turbojet engine has been replaced with a more powerful J65-W-20.

The initial batch of eight aircraft that were modified at Ontario are being used in a pilot training programme, carried out with the support of LAS at Lemoore NAS, California, since the company's contract called also for maintenance, pilot training, and logistics support. When all 40 aircraft have been modified, they will equip two fighter-bomber squadrons based on the Singapore ADC airfield at Changi.

The description of the McDonnell Douglas A-4M in the 1973–74 *Jane's* applies also to the A-4S, except as detailed below:

FUSELAGE: As for A-4M, except fixed nose with detachable nose radome over communications and navigation equipment. Integral flak-resistant armour in cockpit area, including internal armour plate below, forward, and aft of cockpit.

POWER PLANT: As for A-4M, except one 8,400 lb (3,810 kg) st Wright J65-W-20 turbojet engine.

ACCOMMODATION: Pilot on zero-speed, zero-altitude lightweight ejection seat.

SYSTEMS: Dual hydraulic system with manual back-up. Electrical system powered by a 9kVA generator, with wind-driven generator to provide emergency power.

AVIONICS: Include Plessey PTR-377 UHF/VHF radio transceiver, with UHF homing; Collins ARC-159 UHF radio transceiver; Plessey PTR-442 IFF; Collins DF-206 low frequency ADF; Arvin ARN-52 TACAN; Rodale APN-141 radar altimeter; Stewart-Warner APQ-145 air-to-ground mapping and ranging radar; Decca Type 72 Doppler and TANS digital navigation computer system; Lear-Siegler AJB-7 AHRS; Ferranti ISIS D-101 lead-computing gunsight, weapons release programmer, and weapons delivery computer.

EQUIPMENT: Ring-slotted-type braking parachute, 16 ft (4.88 m) in diameter, contained in canister secured in aft fuselage below engine efflux duct. Arrester hook for SATS operation.

ARMAMENT: As for A-4M, except no provision for nuclear bombs or Bullpup air-to-surface missiles. Two 30 mm Mk 4 Aden cannon in wing roots replace the 20 mm Mk 12 cannon of the A-4M, each with 150 rounds of ammunition.

DIMENSIONS, EXTERNAL:

Wing span	27 ft 6 in (8.38 m)
Wing chord at root	15 ft 6 in (4.72 m)
Length overall (excluding flight refuelling probe)	39 ft 5 in (12.01 m)
Height overall	15 ft 0 in (4.57 m)
Tailplane span	11 ft 3½ in (3.44 m)
Wheel track	7 ft 9½ in (2.38 m)

AREAS:

Wings, gross	260 sq ft (24.16 m²)
Vertical tail surfaces (total)	50 sq ft (4.65 m²)
Horizontal tail surfaces (total)	48.85 sq ft (4.54 m²)

WEIGHTS:

Weight empty	9,603 lb (4,356 kg)
Max T-O weight	22,500 lb (10,206 kg)
Max landing weight	16,000 lb (7,257 kg)

PERFORMANCE (at design T-O weight):

Max level speed	572 knots (660 mph; 1,062 km/h)
T-O run at max T-O weight	3,895 ft (1,187 m)
Landing distance (at 14,500 lb; 6,577 kg AUW):	
without braking parachute	3,450 ft (1,052 m)
with braking parachute	2,070 ft (631 m)
Max ferry range	1,680 nm (1,935 miles; 3,114 km)

NASA

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; Flight Research Center: Edwards AFB, California 93523, USA

NASA DIGITAL FLY-BY-WIRE SYSTEM

Under its Digital Fly-By-Wire (DFBW) programme, NASA has modified extensively an LTV F-8 Crusader jet fighter for research into this important field of flight control. It is believed that a number of advantages will accrue if, as a result of a detailed test and evaluation programme, it is proved conclusively that the system is both robust and operationally viable. These may include smoother air travel, a reduction of the pilot's work load, improvements in aircraft payload and/or flight performance, and, in the case of military aircraft, provision of a flight control system that is less vulnerable to battle damage.

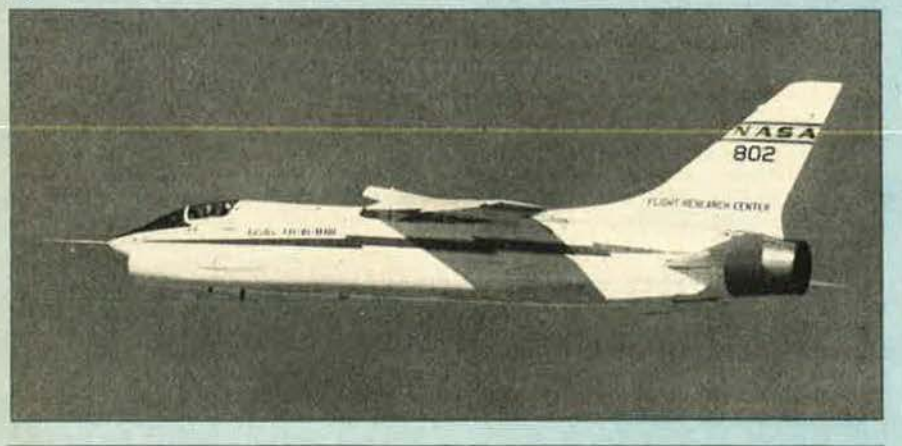
In the research aircraft the mechanical flight controls, consisting of the usual push-rods, bell cranks, and control cables, have been removed completely. They have been replaced by an electronic system in which movements of the pilot's controls initiate signals that are fed via wire circuits to an on-board digital computer. Simultaneously, an inertial measuring unit senses the motion of the aircraft in flight and the resulting aerodynamic forces, and these are also fed to the computer. The inputs from these two sources provide the data required for the computer to evaluate the most appropriate control surface positions, which it signals by wires to electro-mechanical actuators which respond by setting their related controls in the optimum position.

The F-8 research aircraft used in NASA's DFBW programme has a secondary flight control system, consisting of three separate fly-by-wire analogue channels, which serves as a back-up system. In this respect it differs fundamentally from earlier fly-by-wire research aircraft, for these have retained the mechanical flight controls to serve as a back-up in the event of failure of the new system.

The airborne computer and inertial measuring unit are similar to those developed for the flight control system of the Apollo Lunar Module, already proved to be reliable under the most demanding conditions. Their use for the control of a conventional aircraft in earth's atmosphere will ensure fast and accurate positioning of the aircraft's control surfaces, which means that aircraft vibration induced by turbulent air will be reduced to a minimum.

More importantly for the future, it is believed that this faster and more accurate response, which will set flight control surfaces at their optimum positions more effectively than a human pilot, may make it possible to reduce the size of control surfaces or even to relocate them. This could reduce the basic weight and drag of new-generation aircraft, and result in increased payload and/or flight performance.

LTV F-8 modified to flight test NASA's Digital Fly-By-Wire (DFBW) flight control system



SIAI-MARCHETTI

SIAI-MARCHETTI SpA; Head Office: 21018 Sesto Calende (Varese), Italy

SIAI-MARCHETTI SF.260MX

The SF.260MX was developed from the basic SF.260 (see 1973–74 *Jane's*) specifically for military training duties, and was first flown on 10 October 1970.

A total of 116 had been ordered by early 1974; these are designated as follows:

SF.260M. Thirty-six for Belgian Air Force. Delivery completed.

SF.260MC. Twelve for Zaïre Air Force. Delivery completed.

SF.260MP. Thirty-two for Philippine Air Force, which has also ordered 16 of the SF.260W armed version. Fourteen delivered by February 1974.

SF.260MS. Sixteen for Singapore Air Defence Command. Delivery completed.

SF.260MT. Twelve for Royal Thai Air Force. Eight delivered by February 1974.

SF.260MZ. Eight for Zambian Air Force. Delivery completed.

SF.260W. Developed version of SF.260MX, described separately.

As noted in the description which follows, the SF.260MX incorporates a number of important structural modifications compared with the basic SF.260.

TYPE: Two/three-seat military training aircraft.

WINGS: Cantilever low-wing monoplane. Wing section NACA 64_1-212 (modified) at root, NACA 64_1-210 at tip. Thickness/chord ratio 13% at root, 10% at tip. Dihedral 6° 20′. Incidence 2° 45′ at root, 0° at tip. No sweepback. Increased wing leading-edge radius compared with basic SF.260, with lower datum line, to improve stall characteristics. All-metal light alloy structure, with single main spar and auxiliary rear spar, built in two portions bolted together at centreline and attached to fuselage by six bolts. Press-formed ribs, with dimpled stiffening holes.

SIAI-Marchetti SF.260M trainer of the Belgian Air Force

Skin, which is butt-jointed and flush-riveted, is stiffened by stringers between main and rear spars. Differentially-operating Frise-type light alloy mass-balanced ailerons (travel 24° up, 13° down), and electrically-actuated light alloy single-slotted flaps (max travel 50°). Flaps and ailerons operated by pushrods and cables. Ground-adjustable tab on each aileron.

FUSELAGE: Semi-monocoque structure of frames and stringers, exclusively of light alloy except for welded steel-tube engine mounting, glassfibre front panel of engine cowling, and detachable glassfibre tailcone.

TAIL UNIT: Cantilever light alloy structure, with sweptback vertical surfaces (approx 20 per cent greater in area than those of basic SF.260), fixed-incidence tailplane and one-piece balanced elevator. Two-spar fin and tailplane, bolted to fuselage; single-spar elevator and balanced rudder. Reinforced tail unit/fuselage joints compared with basic SF.260. Rudder (30° travel to left or right) and elevator (travel 24° up, 16° down) operated by cables. Controllable trim tab in starboard half of elevator; ground-adjustable tab on rudder.

LANDING GEAR: Electrically-retractable tricycle type, with mechanical standby for emergency use. Small tail bumper under rear fuselage. Inward-retracting main wheels and rearward-retracting nosewheel have Magnaghi oleo-pneumatic shock-absorbers (type 2/22028 on main units). Cleveland P/N 3080A main wheels, with size 6.00-6 tube and tyre (6-ply rating), pressure 35.5 lb/sq in (2.5 kg/cm²). Cleveland P/N 40-77A nosewheel, with size 5.00-5 tube and tyre (6-ply rating), pressure 28.4 lb/sq in (2.0 kg/cm²). Cleveland P/N 3000-500 independent hydraulic single-disc brake on each main wheel. Nosewheel steering (20° to left or right) is operated directly by the rudder pedals, to which it is linked by pushrods. Up-lock secures main gear in retracted position during flight; anti-retraction system prevents main gear from retracting whenever strut is compressed by weight of aircraft. Compared with basic SF.260, the SF.260MX has a reinforced nosewheel drag brace attachment and landing gear retraction supports; increased use of light alloy forgings, instead of welded steel, in certain landing gear structures; and improved retraction locking mechanism.

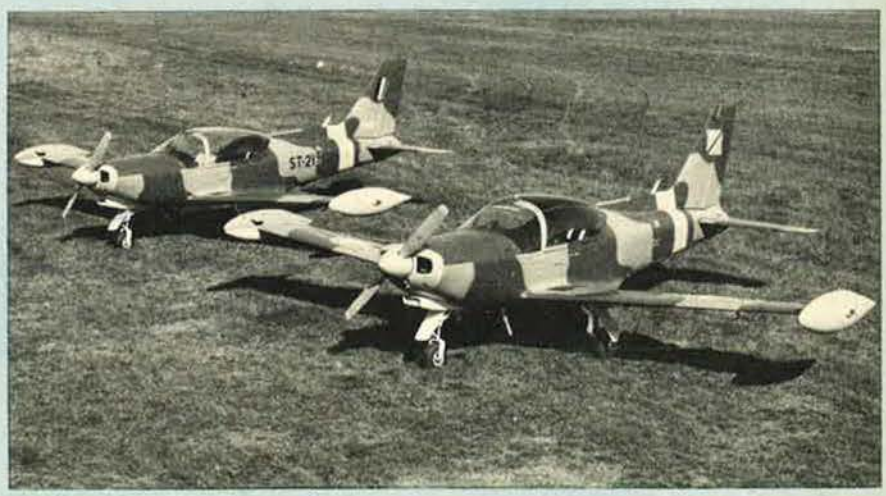
POWER PLANT: One 260 hp Lycoming O-540-E4A5 six-cylinder horizontally-opposed air-cooled engine, driving a Hartzell HC-C2YK-1B/8477-8R two-blade constant-speed metal propeller with spinner. Fuel in two internal light alloy wing tanks, each of 10.9 Imp gallons (49.5 litres), and two wingtip tanks, each of 15.8 Imp gallons (72 litres) capacity. Total fuel capacity 53.4 Imp gallons (243 litres), of which 51.7 Imp gallons (235 litres) are usable. Individual refuelling point for each tank. Oil capacity 22.7 lb (10 kg).

ACCOMMODATION: Side-by-side front seats for instructor and pupil, with third seat centrally at rear. Front seats are individually adjustable fore and aft, and have forward-folding backs and provision for back-type parachute packs. All three seats equipped with aerobatic-type safety belts. Baggage compartment aft of rear seat. One-piece fully-transparent rearward-sliding Plexiglas canopy. Emergency canopy ejection system, instead of the rubber-cord canopy release of the basic SF.260. Steel-tube windscreen frame, for protection in the event of an overturn. Cabin is carpeted, air-conditioned, heated, and ventilated, and walls are thermally insulated and soundproofed by a glass-fibre lining.

SYSTEMS: Hydraulic equipment for main-wheel brakes only. No pneumatic system. 24V DC electrical system, of single-conductor type, including 24V 50A Prestolite engine-mounted alternator/rectifier and 24V 25Ah Varley battery, for engine starting, flap and landing gear actuation, fuel booster pumps, avionics, and lighting. Sealed battery compartment in rear of fuselage on port side. External power receptacle on port side at rear. Connection of an external power source automatically disconnects the battery. Heating system for carburettor air intake. Emergency electrical system for extending landing gear if normal electrical actuation fails; provision for mechanical extension in the event of total electrical failure. Cabin heating, and windscreen de-icing and demisting, by heat exchanger using engine bleed air. Additional manually-controlled warm-air outlets for general cabin heating.

ELECTRONICS AND EQUIPMENT: Basic instrumentation and military equipment to customer's requirements. Dual controls standard. Blind-flying instrumentation and communications equipment optional. Landing light in nose, below spinner. Instrument panel can be slid rearward to provide access to rear of instruments. Compared with basic SF.260, the SF.260-MX has various improvements to flight

SIAI-Marchetti SF.260M (left) and SF.260MC trainers in Belgian and Zaïre Air Force insignia respectively



SIAI-Marchetti SF.260MX military trainer in inverted flight over mountainous terrain

controls, engine controls (duplicated propeller and throttle controls), electrical system, radio, and other equipment installations.

DIMENSIONS, EXTERNAL:
- Wing span 27 ft 0¾ in (8.25 m)
- Wing span over tip-tanks 27 ft 4¾ in (8.35 m)
- Wing chord at root 5 ft 3 in (1.60 m)
- Wing chord at tip 2 ft 6¾ in (0.784 m)
- Wing mean aerodynamic chord 4 ft 4¼ in (1.325 m)
- Wing aspect ratio (without tip-tanks) 6.33
- Wing taper ratio 2.24
- Length overall 23 ft 3½ in (7.10 m)
- Length of fuselage 16 ft 8¾ in (5.10 m)
- Fuselage: Max width 3 ft 7¼ in (1.10 m)
- Max depth 3 ft 5 in (1.042 m)
- Height overall 7 ft 11 in (2.41 m)
- Tailplane span 9 ft 10½ in (3.01 m)
- Wheel track 7 ft 5½ in (2.274 m)
- Wheelbase 5 ft 5¼ in (1.66 m)
- Propeller diameter 6 ft 4 in (1.93 m)
- Min propeller ground clearance 8 in (0.20 m)

DIMENSIONS, INTERNAL:
- Cabin: Length 5 ft 5¼ in (1.66 m)
- Max width 3 ft 3¼ in (1.00 m)
- Height (seat squab to canopy) 3 ft 0¼ in (0.92 m)
- Volume 53 cu ft (1.50 m³)
- Baggage compartment volume 6.36 cu ft (0.18 m³)

AREAS:
- Wings, gross 108.7 sq ft (10.10 m²)
- Ailerons (total) 8.20 sq ft (0.762 m²)
- Trailing-edge flaps (total) 12.70 sq ft (1.18 m²)
- Fin 8.18 sq ft (0.76 m²)
- Rudder, incl tab 6.46 sq ft (0.60 m²)
- Tailplane 15.70 sq ft (1.46 m²)
- Elevator, incl tab 10.30 sq ft (0.96 m²)

WEIGHTS AND LOADINGS:
- Weight empty, equipped 1,587 lb (720 kg)
- Max T-O and landing weight:
  - Aerobatic 2,425 lb (1,100 kg)
  - Utility 2,645 lb (1,200 kg)
  - Utility with external load 2,998 lb (1,360 kg)
- Max wing loading 27.6 lb/sq ft (134.6 kg/m²)
- Max power loading 11.5 lb/hp (5.23 kg/hp)

PERFORMANCE (at max T-O weight of 2,645 lb; 1,200 kg, except where indicated):
- Max never-exceed speed 235 knots (271 mph; 436 km/h)
- Max level speed at S/L 183 knots (211 mph; 340 km/h)
- Max cruising speed (75% power) at 4,925 ft (1,500 m) 161.5 knots (186 mph; 300 km/h)
- Stalling speed, flaps up 74 knots (85.5 mph; 137 km/h)
- Stalling speed, flaps down, power off 64 knots (73.5 mph; 118 km/h)
- Max rate of climb at S/L 1,496 ft (456 m)/min
- Time to 4,925 ft (1,500 m) 4 min 0 sec
- Time to 7,550 ft (2,300 m) 6 min 50 sec
- Time to 9,850 ft (3,000 m) 10 min 0 sec
- Service ceiling 16,400 ft (5,000 m)
- T-O run at S/L 1,837 ft (560 m)
- T-O to 50 ft (15 m) at S/L 2,543 ft (775 m)
- Landing from 50 ft (15 m) at S/L 2,264 ft (690 m)
- Landing run at S/L 1,132 ft (345 m)
- Range with max fuel 777 nm (895 miles; 1,440 km)
- *g* limits:
  - at max Aerobatic T-O weight +6; −3
  - at max Utility T-O weight (without external load) +4.4; −2.2

SIAI-MARCHETTI SF.260W

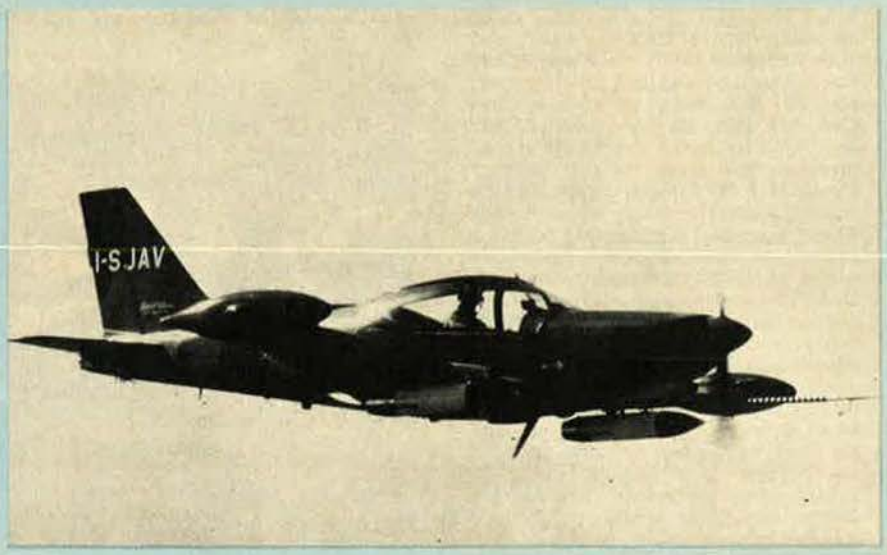
The SF.260W, flown for the first time in May 1972, is a developed version of the SF.260MX, combining the structural and technical characteristics of the SF.260MX with the ability to carry external loads, up to a maximum of 660 lb (300 kg), on two underwing pylons. In addition to the range of close-support missions possible with the SF.260MX, the SF.260W can also undertake such roles as low-level strike with rockets, anti-tank missiles, or machine-guns; forward air control; forward area support, with droppable supply containers; armed reconnaissance; camouflage inspection; or liaison.

The SF.260W also meets the requirements of modern primary flying training, including basic flying training; instrument flying; aerobatics, including deliberate spinning and recovery; night flying; navigation flying; and formation flying.

Sixteen SF.260Ws have been ordered by the Philippine Air Force.

ARMAMENT: Typical alternative underwing loads when carrying a crew of two include two Matra MAC AAF1 7.62 mm gun pods; two 50 kg bombs; two Matra F2 launchers, each with six 68 mm SNEB 253 rockets; two Simpres AL 9-70 launchers, each with nine 2.75 in FFAR rockets; two Simpres AL 18-50 launchers, each with eighteen 2 in SNIA ARF/8M2 rockets; or two Alkan 20AP cartridge throwers for Lacroix 74 mm explosive cartridges, flare cartridges, or F.130 smoke cartridges. As a single-seater, two 120 kg bombs can be carried.

SIAI-Marchetti SF.260W light strike version of the SF.260MX military trainer



A B-52G aircraft commander and former F-105 EWO tells what it's like to fly the Stratofortress. "In the air, she responds like a lady—aloof, dignified, and surprisingly agile." But the setting of his story is no ordinary mission. It's August 15, 1973, as he and his crew leave the swaybacked runway at Andersen AFB on . . .

The Last B-52 Mission From Guam

BY CAPT. VICTOR B. PUTZ, USAF

WHILE driving past the local flight line, my four-year-old daughter recognized a T-37 jet trainer and squealed, "Daddy, you used to fly one like that!" I was delighted that she could identify the little aircraft.

A moment later, she shattered my complacency: "But now you fly a BOQ."

In an era of aviation characterized by large flying machines, the aging B-52, admittedly smaller than some BOQs, is still a big airplane. Its wingspan is 185 feet, and its fuselage length is 157½ feet. But this enormous exterior belies the crowded interior of the BUFF (Big Ugly Fat Fella). Besides the bomb bay, massive fuel cells, and flight control system, the entire structure is crammed with electronic devices, leaving only a small crew compartment in the nose.

In this pressurized area are six ejection seats. Each of the six-man crew who occupies these positions has a hand in operating the black boxes—operations that range from performing the magic of electronic warfare and radar-controlled marksmanship to such a mundane routine as managing vast quantities of jet fuel to control the aircraft's center of gravity.

As you may imagine, flying this 250-ton composite of fuel, metal products, and electrical sophistication into combat isn't like driving the family wagon to the park. Delivering the goods from the mid-Pacific island of Guam to a Southeast Asian target and returning intact to that same dot on the ocean takes considerable prior planning.

My crew flew the last BUFF raid of the war, on August 15, 1973. For us it began long before sunrise, like thousands of other missions. A half hour of prebriefing study gave us the route, communications, and performance data. The briefing itself provided last-minute target-area intelligence, another look at the mission profile, and a weather report that revealed our route of flight was blanketed by familiar tropical disturbances, head winds, and towering cumulus adversity—nothing new or unusual. "Blue

"The Giant Pickle Farm" at Andersen AFB, Guam, crowded with black-bellied B-52D and G models. The Gs have the white, heat-reflective undersides.

Cell," our flight of three B-52s, was in for another full day.

Ed, the radar navigator (called "bombardier" in wars past), and Jim, our navigator, completed some concentrated target study, reviewing radar photography and bombing data. John, the EWO (electronic warfare officer), picked up the communications documents and reviewed enemy threats in the target area. And Dick, our gunner, reviewed the enemy fighter threat and picked up the in-flight meals. Crew efficiency, supported by food and liquids, is an imperative for successfully completing a fourteen-hour mission.

The survival equipment shop issued our survival vests containing emergency gear—equipment of vital importance to crew members ejecting from failing aircraft. This equipment has helped many of them to stay alive until they could reach friendly territory or be rescued.

We followed the sober routine of checking the survival radios and other articles that would, luckily for us, remain unused for the last mission.

Bomb-laden B-52Ds, above, line up for takeoff from Andersen AFB. At right, one of the Stratoforts lifts off on its fourteen-hour mission to a target somewhere in Southeast Asia.

Behind the Scenes

Many people contribute directly to the ease with which we prepare for and execute a mission. Behind the scenes are flight planners, intelligence experts, meteorologists, survival-equipment specialists, and many more.

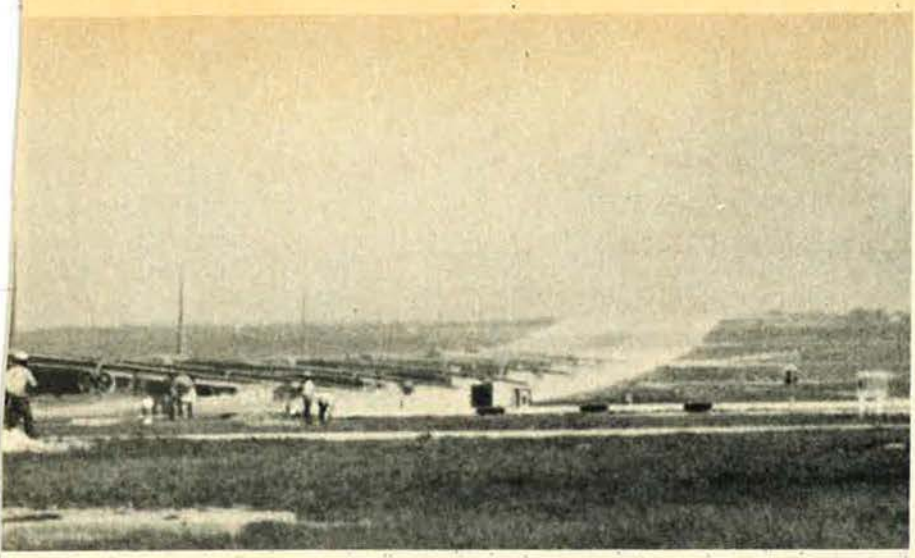
We now have a busload of equipment and people. The driver has been hauling B-52 crews for months and thus anticipates our request to stop at the Base Operations Cafeteria to pick up a sandwich for breakfast and call Maintenance Control to check the status of our primary and spare aircraft. They are in commission.

Passing onto the flight line, the security policeman checks our access badges perfunctorily—we've faced each other a dozen times. He asks the usual, "When are we going home?" We return the monotonous, "I don't know."

The bus carries us around the south end of the airfield and up over the hill behind the Launch Control Officer's "Charley" Tower. Andersen AFB spreads out like a giant saucer to the northeast. The roller-coaster dual runways ease downward as if to follow the approach glide slope, then rise again beyond the midpoint to peak out at the departure overruns.

Superimposed on this huge asphalt-glazed coral depression are scores of varishaded green camouflaged BUFFs. (Someone has dubbed it "The Giant Pickle Farm.") The old black-bellied "D" model B-52s rest sinisterly among the "Gs" with their white, heat-reflective undersides—paint that betrays the intent of their design. The utility of these versatile nuclear weapons carriers has been expanded beyond the role for which they were originally developed.

We preflight our "G" quickly, start engines on the navigator's cue, and wait for amplifier tubes to warm up, timers to cycle, and indi-



cators to flash "standby" and "ready" using aircraft generator power before we announce over the UHF radio, "Charley, Blue Two is in the green."

"Thanks, Buddy. Taxi ten early with the cell, they'll be ready to go shortly."

After another fifteen minutes of rechecking equipment and a quick call to the tower, we watch Blue One glide past, engine compressors wailing in the darkness.

We exchange courtesies with the crew chief who detaches his interphone umbilical and hustles forward to marshal us out of the parking area with his illuminated wands. I push up the power and our aircraft stirs. The ten wheels break inertia, pause momentarily for a brake check, then roll over the taxiway. I flash a "thumbs up" to the crew chief standing barely visible in the darkness as we make the turn to follow Blue One.

Our three BUFFs hulk down the center ramp and off to the inactive runway. Once away from the parking area each in turn pivots heavily on the main gear, left, then right, to check the crosswind landing system as we taxi up the runway centerline. A left turn to follow the loop around "Charley's" Launch Control Tower brings us to an uphill stop for a final check by maintenance on the crest of the hill that forms the approach end of Runway Six Right.

"Blue One, Two, and Three, maintenance says you look good. Change to Tower; you're cleared for a five early takeoff. See you tonight."

"Thanks, Charley."

There is a sliver of dawn under the clouds to the east. America is seeing that as a sunset.

Airborne

As lead passes the hold line, we start timing. Moments later Jim calls, "Crew, nav, sixty seconds . . . thirty . . . fifteen. . . ." We're moving.

A B-52 climbing a hill never seemed natural to me; it takes a lot of power to nudge it over the rise and onto the hardened overrun that extends the runway available for our heavyweight takeoff roll. Jim counts ". . . four, three, two . . . crossing now."

The runway swings into the front windscreen as the copilot sets two throttles at the computed EPR (engine pressure ratio); I match them with six more. The engines are thundering as the copilot shouts, "Water!" The whine of boost pumps is lost as the water injection system jolts thousands of pounds more thrust through the engines' tailpipes. S-1 (decision) speed passes quickly as we accelerate down the slope and commit ourselves to force, momentum, and the flexing wings of our bomb-laden flying gas tank.

Liftoff isn't like the characteristic flamboyant rotating attack on the airstream familiar to other aircraft. The B-52 seems to soberly test the air for lift, wingtips first, then the vast expanse of wing rises, arching, carrying the weight of the fuselage until the gear struts reach full extension and rubber leaves the runway.

We climb a shallow path over the edge of Guam's coral cliff, gaining an instant five hundred feet of altitude down the precipice to the breakers below.

My copilot flips the controls, and our Stratofortress envelops its landing gear and flaps, metamorphosing from a wrinkled, ground-bound drag device to a sleek soaring machine solidly gaining altitude into the cloud layer.

Ed, the radar navigator, takes over the job of "looking" outside the cockpit—guiding our way between the cumulus cells of turbulence and precipitation. His electronic acuity allows us to join up with the lead aircraft as Dick, the gunner, scans the sky with his aft-looking radar in search for Blue Three. The last man in the formation has lost his navigation radar and has to steer for the bright spots in the translucent clouds to avoid the almost opaque cumulus build-ups until Dick can pick him up and direct him to follow us.

My crew relaxes its tense concentration on takeoff procedures as we climb above minimum ejection altitude, bad weather, and through oxygen checks to level off high above the life-supporting density of the lower atmosphere. Here, we trim the flying surfaces and adjust throttles balancing the thrust to reduce drag; it is never too early to think of "scrooging" fuel for the long return trip. Adjusting the throttles to close compressor bleed

Flying in cells of three aircraft, the B-52s could deliver their bombs on command from ground-based precision radars, by LORAN, or with their own integral radar-bombing systems.

valves saves a few more pounds of JP-4.

The B-52G can make the entire round trip without refueling, but her older sister—the "D" model—carries more weight in weapons and must refuel en route from that famous flying petrol pump, the KC-135 Stratotanker.

Across the Pacific

My copilot logs the total fuel and notes that we're slightly above the preplanned fuel curve. Now flying on autopilot, we both give the cockpit and instruments a routine once-over and switch on the pilot's terrain-avoidance radar system to pick up our formation leader on the scope.

Without modifying even one black box, ingenious Yankee adaptability has turned the equipment used for "seeing" the ground between mountains and over hills in high-speed, low-altitude flight into a reliable method of flying precise formation under instrument meteorological conditions. The radar navigator reads off the feet down to a two-mile trail position and a minor power change establishes our configuration for the coming hours of listening to the monotonous droning noise of airstream and pressurization equipment as we fly west across the Pacific.

The weather ahead jolts my attention back to the present and the great mushrooming anvil-topped cumulus cells of violence rising over the Philippine Islands.

The line of storms poses a familiar challenge to our formation's navigators. They replan the route through a soft spot in the weather and give the copilots enough information to change our flight clearance. Radio voices break the ringing aircraft noise as the leader's copilot calls to Manila Center and mine contacts "Maypole," the Mission Director back at Andersen. Incongruously, flying our formation into combat receives no priority among the myriad of air routes assigned to civilian airliners, but the route change is approved, and we continue through Philippine airspace.

The call to Maypole brings another, also routine, challenge to the navigators: an ATC (Air Target Change) that means a new route to plan, bomb run initial point (IP) to plot, target to strike, and revised procedures for intercepting the return route. The call is also a reminder that we are tethered by the lines of a communications network that reaches from every airborne SAC aircraft back to any SAC Command Post and even to the Boeing factory. It gives us someone

:o talk to if something goes wrong with the airplane, and gives our boss the ability to change our mission at the last moment before expending weapons.

As we prepare to penetrate the storm line, the anti-ice system barely has time to heat the engine nacelles and airscoops before we see frost beginning to collect behind the windscreen wipers. Ed's radar antenna beats against its limits in sector scan as he searches for the holes in the wall of tumbling ice and rain. The denser cells of water completely block and reflect his radar energy, casting long shadows behind the bright reflections on his radar tube.

St. Elmo's fire, static electrical discharge displayed across our windows, leaves sparkling webs of light radiating over the windscreen and screams into our high-frequency radio, rendering it unusable and increasing interphone noise. The EWO's radar receivers pick up the disturbance as if a hundred radars were attacking his antennas. Our gunner calls directions to the crew of the number three aircraft to maintain their formation position since their radar and integrated terrain avoidance system isn't working. Our three aircraft have become an almost organic formation of eighteen crewmen working together, communicating with each other by radar and UHF radio. The fury of the storm subsides into dismal cloud layers.

Moments later, we break out. Beaches and jungle-covered islands in the Philippine Sea pass underneath and behind.

Electromagnetic Shield

The Vietnamese landfall is next, and we begin to shake off the mind-dulling effects of sustained airframe vibration and the noise of the airstream, electronics cooling fans, gyros, and the pressurization system.

Dick and John exchange defensive equipment status information with the other aircraft to coordinate defensive tactics against the possible enemy radars, missiles, and fighters. During the Linebacker II saturation bombing raids on North Vietnamese targets in December 1972, this defensive equipment and the systems operators contributed much to the astonishingly high ninety-eight percent survival rate of the bombers. This rapidly continuing evolution of electronic warfare since Winston Churchill's "Battle of the Beams" over England during World War II makes the operational script of today's black-box performance read like science fiction.

John's panoramic receivers can pick up any radar, radio, or even television signal across a broad spectrum of electromagnetic frequencies. He can identify the type of threat, determine its direction from the aircraft, and decide precisely when to launch his electronic counterattack.

In the event of a surface-launched missile threat like the SA-2, long-range radar indicates to the missile crew that something is coming. Detection of the long-range radar signal warns the EWO that his airplane is being "watched." The first whisper of the enemy's SAM tracking radar makes a faint blip on his scope and a barely audible chatter in his earphones, but an EWO can identify it immediately. It's like a rattlesnake; you may be startled a dozen times thinking you've encountered one, but, if it's the real thing, there's no mistake.

The signal is to be treated like a death ray. To fool it, the EWO must mask the airplane, flood their radar receivers with energy, overload their computers with too much information, jam them with white noise, spoof them, make them lose his aircraft, or make them see a false image of it somewhere else. Aircraft in formation protect each other with an expanding shield of radiation, their EWOs refining, concentrating, modulating the energy to protect the formation, call directions to their crews, and alert other friendly aircraft. Pilots maneuver within the shield, avoiding electronic capture.

I remember, from another year and flying in another airplane (the F-105 Wild Weasel) while waiting

B-52G STRATOFORTRESS—FACTS AND FIGURES

Manufacturer	The Boeing Co.
Type	Long-range bomber.
Powerplant	Eight Pratt & Whitney J57-P-43W turbojet engines, each with 13,750 pounds of thrust.
Length	157 feet, 7 inches.
Height	40 feet, 8 inches.
Wingspan	185 feet.
Gross Weight	488,000 pounds.
Range	More than 8,000 miles unrefueled.
Speed	Approximately 630 mph at 20,000 feet.
Service Ceiling	55,000 feet.
Crew	Pilot, copilot, navigator, radar navigator (bombardier), electronic countermeasures operator (EWO), gunner.
Armament	Four .50-caliber guns in tail turret; two AGM-28 Hound Dog air-to-ground missiles under wings; bombs and Quail decoy missiles carried internally. Some B-52Gs have been modified to carry 20 AGM-69A SRAM missiles, six under each wing and eight in the bomb bay.
First Delivery to SAC	February 1959 (the prototype XB-52, on which all subsequent models were based, first flew in October 1952).
Production	193 production G models built. (The total of all B-52 models produced between 1954 and 1962 is 744. Remaining in SAC units are 397 B-52s: 120 Ds, 165 Gs, 90 Hs, and 22 Fs, which are used for training.)

for the BUFFs as we flew their antimissile escort, how our first indication that B-52s were on the way was the increasing intensity of the hiss of their electronic jammers.

Locating their formations was not easy. In clear weather, we could spot them visually far above our altitude, revealed by a pattern of three barely discernable shapes trailing endless streamers of condensation like etchmarks on the sky. They seemed surrounded by an almost tangible aura of sober aloofness; untouchable, deadly, punctual. We often joked that if we had forgotten to check our watches at the briefing we could hack them when the bombs detonated on target.

Bomb Release

On track, Blue Cell is approaching the target area, and we follow the navigator's directions as we turn to adjust our timing. Our flight to the target is not interrupted, and the pace quickens as we drift to one side of the lead aircraft's track and our number three moves to the other. The staggered three-ship formation pattern ensures optimum coverage of the target.

We can deliver the bombs in several different ways. One is by coordination with a ground-based precision radar that directs us to the target; another is by following an especially instrumented B-52 bomber or F-4 fighter using precision LORAN equipment to locate the target. Then, of course, there is the self-contained radar-bombing system in our own aircraft.

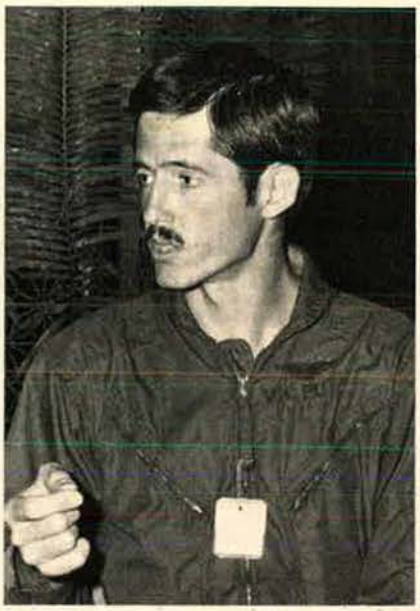
As I've mentioned, position of the aircraft is important to optimize target coverage, but it is also necessary for accuracy of the delivery. The distance between aircraft is translated into time, and no matter what delivery tactic is used to locate the target, the bomb run from the IP to BRL (Bomb Release Locus) has the familiar countdown, the measured cadence of seconds, of time running out: Sixty seconds TG (to go) . . . bomb doors open . . . thirty seconds TG . . . twenty . . . ten . . . five, four, three, two, one. . . . The split second of finality arrives, that last moment for decision, that last point of control and commitment—hack!

The lead bomber releases, and the navigators in the following aircraft continue to count for the delay while their aircraft cover the distance to the release point. The sequenced release is punctuated by flashes of the Bomb Release Light and a panel of indicators that extinguish individually as each weapon leaves its rack. The count continues to the break, and I bank steeply to leave our inbound track. In the turn, we see the three rows of bombs walk neatly, relentlessly through the target.

The copilot transmits a message to the Mission Director so that additional sorties will not be programmed against that target. The bombing is complete, and our mission is half over.

We relax from the effort of holding exact position, altitude, and airspeed on the bomb run and push the throttles forward, climbing to our final homebound altitude.

We have flown the last B-52 mission of the Southeast Asia war. ■



The author, Capt. Vic Putz, completed navigator and electronic warfare officer training in 1965. After a year in B-52Hs, he completed the Wild Weasel training course and flew a combat tour in SEA as a Weasel squadron EWO. Following graduation from pilot training in 1970, Captain Putz returned to SAC, becoming a B-52G aircraft commander in February 1973. The combat mission described here—the last from Guam—was flown during his second SEA deployment as a B-52 pilot. He is now an operations staff officer at Hq., Eighth Air Force, Andersen AFB, Guam.

MILLION-HOUR ENGINE CHANGE

In the months after Pearl Harbor, the Japanese timetable for their Pacific conquests went according to plan. Nothing stood in their way except the stubborn American resistance in the Philippines.

Until our surrender, we kept hidden a handful of beat-up, shot-up, patched-up P-40s and several worn-out and obsolescent P-35As. Until the end, they hit and hurt the enemy when and where the Japanese least expected.

These fighters, known as the Bataan Air Force, looked like they had been used as targets for gunnery practice and then had been finished off with hand grenades.

Finally, when they were in such poor condition that we joked, "You have to push 'em to get 'em started," a message was sent to Washington: "Please send us another P-40 engine. The one we have is worn out."

—Contributed by S. Samuel Boghosian

(AIR FORCE *Magazine will pay $10 for each anecdote accepted for publication.)*

A REPORT ON AEC RESEARCH

Nuclear warhead design—a vital but little appreciated element in the effectiveness of US nuclear deterrence strategy—must be responsive to adjustments in targeting concepts. In an exclusive interview with AIR FORCE Magazine, the Atomic Energy Commission's ranking weapons expert describes the options available in matching . . .

WARHEAD DESIGN AND NUCLEAR STRATEGY

BY EDGAR ULSAMER
SENIOR EDITOR, AIR FORCE MAGAZINE

THE Atomic Energy Commission, nuclear armorer to the Defense Department, has "in hand" the technology to boost the yield-to-weight ratio of US ICBM warheads "to about twice the present level and possibly even triple that ratio," according to Maj. Gen. Edward B. Giller, USAF (Ret.), the AEC's Assistant General Manager for National Security. General Giller told AIR FORCE Magazine that the ability to double the yield is "certain because we have the necessary technology sitting on the shelf; to say categorically that we can triple yield to weight appears to be some time away. But the technology that went into the Minuteman warheads is ten years old, and, obviously, we have made a good deal of progress since then."

The importance of doubling or even tripling the yield of ICBM and SLBM warheads cannot be overrated. The USSR, already far ahead in missile throw weight, is on the threshold of increasing its lead even more (see "Soviet Objective," p. 22) by deploying a new family of advanced large ICBMs. Deploying these new ICBMs could give the Soviet Union a five-to-one lead over the US in throw weight, according to DoD estimates. Doubling the US yield-to-weight ratio obviously would cut the potential Soviet advantage in half.

Most US defense planners are willing to grant the Soviets a modest lead in throw weight since the US is, and presumably will continue to be, ahead in warhead accuracy. It is an immutable law of physics that increasing the accuracy with which a nuclear weapon is delivered against a hard target improves the kill probability far more than does a comparable increase in yield. Better yield-to-weight ratios mean that, without increasing missile throw weight, the US could either use the same number of higher-yield warheads or give each missile more warheads of the same yield as those now used.

For example, it would be possible to deploy five or six MIRVed warheads on each Minuteman missile rather than three as is now the

case. Missile effectiveness would be even further improved if the increase in yield were to be coupled with accuracy improvements, also known to be technically feasible.

The yield of any Minuteman warhead in the US inventory at present is deemed adequate to destroy even the hardest target, provided it is delivered precisely.

"The Minutemen's warhead size is fully adequate for our missions and can cope with even the extremely high hardening levels that are being incorporated into new Soviet missile silos and command and control facilities. The USSR, on the other hand, sees merit in high-yield warheads, such as the twenty-five-megaton warhead of the SS-9. Soviet planners may well believe that this kind of capability impresses the third-world countries. Our own analysts can't find any real need for such a weapon," General Giller said. He added that the US has, in fact, sharply reduced the megatonnage of its nuclear-weapon stockpile as a result of "our changing perception of true cost-effectiveness and because of shifting so much of our deterrence to missiles." (According to AEC estimates, the total yield of all bombs dropped in World War II was no more than one twenty-fifth of one percent of the yield of the nuclear weapons in the US inventory at present.)

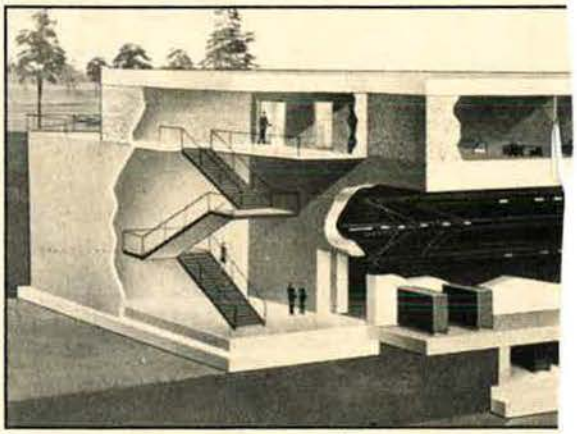
Hard-Target and Antipersonnel Weapons

Simple logic shows that in order to destroy a target hardened to a certain level, say 3,000 psi, a nuclear weapon targeted against it must provide air and ground shocks that are greater than 3,000 psi. This is a function of both warhead yield and delivery accuracy. The weapon must be delivered close enough to the target so that the energy it releases has not been abated by distance to a level below that required to destroy the target. In the language of the nuclear strategist, the target must be within the lethal zone.

Thermonuclear weapons can be designed for use against hard targets or for other purposes by varying their nuclear components. These weapons have two principal parts: a fission trigger (in fact, an atomic bomb) that starts the fusion process of the thermonuclear part—a process sometimes called thermonuclear burn. The relative sizes of the two parts can be adjusted to achieve differing results. The basic difference is the so-called "clean," as opposed to "regular," bomb. The smaller the fission trigger in relation to the fusion yield, the cleaner the weapon. But the cleaner the bomb, the greater the production of neutrons, small uncharged particles spun off from the atomic nucleus by fusion.

Large neutron doses are lethal to life. A clean bomb, therefore, is optimized to kill people rather than destroy things and is considered attractive for tactical missions because it not only reduces collateral damage (to the territory of an invaded ally, for instance) but also permits friendly troops to enter combat areas shortly after detonation because of reduced fallout. (If the objective were prolonged contamination of a given area, materials with a long half-life can be used, as in the so-called cobalt bomb.)

In the case of hardened military targets, the principal objective is to deliver as much air and ground shock as possible. The neutron yield of the weapon is of no particular interest. Since shock yield is the prime concern, a hard-target weapon is designed to spread its shock waves as far out in radius as possible, while no need exists to scatter a lot of neutrons.



Glass laser facility being developed at the AEC's Lawrence Livermore Laboratory, Calif.

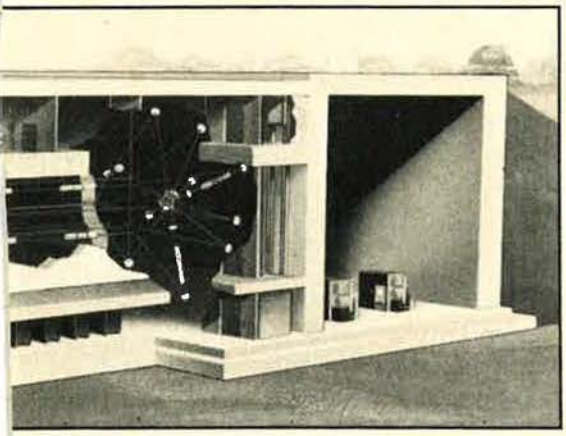
In delivering hard-target weapons, the optimum technique is to detonate "essentially at ground level to obtain the highest possible ground and air shock. The bomb really doesn't care whether the detonation altitude is off by five or even ten feet either way," General Giller explained.

ABM Weapons

Nuclear weapons designers have a number of additional options to optimize fusion devices for special missions. One is to boost the X-ray yield of antiballistic missile warheads. The purpose, General Giller explained, is to make the weapon "hotter" (intensify the nuclear burn), to stimulate X-ray generation. These electromagnetic waves are uniquely effective in space

where they are not absorbed by an atmosphere. They reach out over great distances to kill an incoming RV by depositing their energy on its nose cone as well as on its electronics. As the X rays strike the nose cone, things get sort of jammed up, an enormous heat buildup occurs, and a portion of the nose cone explodes. The result is that shock waves penetrate to the inside where they cause damage.

"At the same time, the shape of the reentry body is likely to be altered by the breakup so that it won't enter the atmosphere properly and will destroy itself in the process. Concurrently, the electronics of the vehicle are damaged. A multiple-effects phenomenon makes it hard to determine precisely which force starts the destruction of the RV.



The 10^4 joule laser will be used in Livermore's research on laser fusion.

"The effectiveness of X rays depends on the type of RV against which they are directed. In case of the single RV of the [gigantic Soviet] SS-9, which involves a great deal of shielding, a large amount of X-ray energy is required to achieve a kill. In a practical sense, the defender's permissible miss distance is, therefore, quite limited," according to General Giller.

It is also possible to boost a weapon's output of gamma rays (electromagnetic waves of shorter length than X rays). Gamma rays are even more destructive to electronic systems than are X rays. The radiation product of a nuclear burst in or above the atmosphere is usually lumped together under the heading of EMP, for electromagnetic pulse, whose effects are not fully understood and, therefore, somewhat unpredictable. From the weapon designer's point of view, EMP has at least two practical applications. It can damage communications hardware, especially computer memories and delicate electronic junctions. This may mean, for instance, that a spacecraft's transistors may survive intact, but they are no longer hooked up because the contact was burned out by EMP. Similarly, unshielded computer memories may be wiped out under certain EMP conditions.

Recent EMP simulation by the AEC and agencies of the DoD, General Giller pointed out, dictate caution with regard to unproved claims about extremely lethal effects of EMP on spacecraft. "A large number of satellites are orbiting the earth at various altitudes, some of them hardened and others soft. We are confident that the rather large five-megaton warhead of Spartan [the long-range interceptor of the SAFEGUARD ABM system] would have no significant effect on most of our important geosynchronous satellites (satellites that orbit at an altitude of about 22,300 miles)," General Giller told AIR FORCE Magazine.

The other principal effect of EMP, the AEC official said, could be a fleeting disruption of communications themselves, aside from hardware damage. "The detonation of a nuclear weapon, like a severe thunderstorm, disrupts the ionospheric balance. In a sense, it blows a hole through the ionosphere [most long-range communications signals are propagated by being reflected back and forth between the ground and the ionosphere]. As a result, whatever was there to reflect the beam is momentarily gone, and the signal keeps on going, right out into space. In addition, the fission trigger of a nuclear weapon causes severe electronic noise in all parts of the spectrum during the period of its burn and thereby can drown out communications data," he said.

Fratricidal Effects

Nuclear weapons effects cause one of the difficult problems associated with a massive nuclear attack, such as one nation's first strike against another. One of the most formidable deterrents against aggression of this type is timing, the arrival of warheads over their targets at proper intervals to avoid the so-called fratricidal effect. In other words, detonation of one nuclear weapon acts in the manner of an ABM on an incoming RV—even though both were launched by the same aggressor. "The only way to overcome this fratricidal effect is through warhead hardening. But it turns out that it takes an awful lot of heavy shielding to make up for a few seconds in timing. In the last analysis, there really is no way to beat the laws of physics.

"Fratricidal effects come in two principal

forms. One is the chance that the radiation from the first warhead will physically destroy the second incoming one; that condition prevails only briefly. The other fratricidal effect is caused by debris that can break up the incoming weapon's heat shield or by severe winds blowing the RV off course. Extreme temperature gradients induced by the detonation of the first weapon can also affect the ballistic reentry of the incoming warhead and impair its accuracy," General Giller explained. Neither DoD nor the AEC is aware of any evidence that the Soviet Union has been able to solve the problem of fratricidal effects, a fact that must be considered as working against the notion of a successful preemptive strike.

AEC's Nuclear Weapons Program

According to Maj. Gen. Edward B. Giller, USAF (Ret.), the AEC's Assistant General Manager for National Security, the technology for doubling the yield-to-weight ratio of US ICBM warheads is in hand.

In Fiscal Year 1975, the Atomic Energy Commission's budget plan calls for an investment of about $1 billion in weapons programs, involving about $875 million in RDT&E and production and the remainder in facilities. (Not included is about $160 million in nuclear powerplant developments for the Navy's Trident submarines. The AEC funds the development of the first prototype reactor for SSNBs, and the Navy budget covers all buys thereafter. The AEC continues to act as the contracting agent throughout the life of the program.) DoD/AEC cooperation in US nuclear weapons stockpiling is based on a three-year presidential authorization, updated once each year, according to General Giller.

This authorization originates with the Joint Chiefs of Staff. Following a thorough review by DoD and AEC, the recommendations for the weapons stockpile are forwarded to the President for approval.

The AEC's nuclear weapons R&D, General Giller explained, "is shaped by DoD requirements. Their people are in constant touch with our laboratories and know what the state of the art is, so that DoD's requirements are never stated in the blind. Our laboratories at Los Alamos, N. M., and Livermore, Calif., maintain a level of research that enables us to back up what we claim we can do. In other words, we never promise what we can't deliver, and generally we prove out new techniques at our test facilities in Nevada before we make any claims about them."

DoD and AEC concerns in "weaponizing" nuclear technologies are not confined to improvements of the yield-to-weight ratio but also involve "marrying the warhead to the total weapon system, so that its characteristics blend in with those of the total system, be that an ICBM, a SRAM, or whatever. In the case of nuclear artillery shells, for instance, meeting the diameter constraints is obviously crucial and more important than yield to weight," the AEC official explained.

Figuring prominently among DoD requirements is cost reduction. "One kilogram more or less of plutonium, or uranium in the fission trigger of a weapon makes a great deal of difference in cost, because each gram costs several dollars. Often a warhead is redesigned simply to reduce costs. The nuclear material is always reusable—we never throw it away—and the only real expense is that of manufacturing. Since manufacturing costs usually are about the same as material costs, repackaging is often cost-effective," General Giller said.

AEC's High-Energy Laser Program

Included in the current AEC weapons operating budget is a $44.4 million item covering laser fusion. This is separate and apart from a similar program carried out by the Commission as part of its Controlled Thermonuclear Reactor research. The purpose of the latter is to duplicate the sustained fusion process of the sun for purposes of power generation. (While this form of power generation is considered ideal—its basic resource is a virtually unlimited supply of hydrogen isotopes in ocean water, and it would produce only minimal environmental pollution—its realization is thought to be at least twenty years away.)

The interest of AEC weapons technologists in laser fusion is different, consisting of both nuclear-effects simulation and a potential long-term goal—substitution of a laser in place of a fission trigger in thermonuclear weapons. The latter, General Giller said, "is a long way away from solution. Before we can think about this approach in a practical sense, we will have to invent a new kind of laser that is less bulky than the systems we are exploring now."

The principle of laser-induced fusion involves taking a pellet—usually deuterium and tritium, both hydrogen isotopes—and applying to it intense laser energies. This squeezes the pellet to a very small size, inducing pressures and temperatures similar to those in the sun. The result is nuclear fusion of the hydrogen particles into helium, releasing nuclear energy that can simulate weapons effects, drive power plants, or make available vast amounts of energy for other purposes.

Even if the power output of high-energy lasers falls short of achieving fusion power, General Giller explained, "we can create high bursts of neutrons which in turn produce X

rays and gamma rays that we use in the study of nuclear weapons effects on various objects."

Two separate laser systems are being explored by the AEC, he said. The Commission's Lawrence Livermore Laboratory is concentrating on a multipath neodymium glass system while the Los Alamos facility is working on a CO_2-type gas laser. The latter's efficiency is much higher than the glass laser.

So far, the best glass lasers have an efficiency of 0.1 percent, meaning that only one tenth of one percent of the electrical energy put into the system can be extracted as laser light. The gas laser can achieve ten percent efficiency. For fusion lasers to become truly effective, General Giller said, "it is necessary to have an energy output that is greater than the amount of power we feed into the system. For the time being, only the gas laser shows this potential." (According to congressional testimony by Maj. Gen. Frank A. Camm, AEC's Assistant General Manager for Military Applications, "the Russians are considerably ahead of us" in laser fusion efforts because they have more powerful lasers.)

General Giller told this reporter that the final decision has not been made as yet about what type of gas laser is best suited for power generation, although a carbon-dioxide system ranks prominently among those being considered. The Air Force Systems Command is also conducting laser weapon research at Kirtland AFB, N. M., but is concentrating on applying laser energy over relatively long periods of time, whereas the AEC confines its work to very short pulse systems.

An ancillary goal is "the sorting out of various types of isotopes, especially the separation of uranium-235, a fissile material, from the plentiful uranium-238, a nonfissile material," according to General Giller. If this method turns out to be practical, he added, it might sharply reduce the cost of reactor-grade fissile material by eliminating the costly diffusion process currently required to produce uranium-235. (Isotopes are atoms of the same element that have an identical nuclear charge but different masses or atomic weights; they have the same number of protons in their nuclei but a different number of neutrons. Uranium-238 contains 146 neutrons while uranium-235 has only 143; both have ninety-two protons. As a result, the atomic weight of one uranium isotope is three higher, or 238, than that of the other.) Some $10 million of the AEC's weapons research budget is allocated to isotope separation efforts in FY '75.

Another crucial, long-term AEC effort in support of military requirements involving radioactive isotopes pivots on the Air Force's Highly Survivable Satellite System and its two prototype designs, Lincoln Experimental Satellites LES 8 and LES 9, scheduled for launch next year. These spacecraft will use sophisticated radioisotope thermoelectric generators in place of conventional solar cells to achieve high nuclear hardening. The generators are being designed and developed by AEC.

Tactical Nuclear Weapons

One of the areas most challenging to the AEC's weapons designers is nuclear warheads for tactical short-range missiles and artillery, whose primary potential function is the defense of NATO against the numerically superior Warsaw Pact nations. Involved are two types of artillery shells, tailored to the two principal calibers in the inventory of the US Army and the NATO forces—155-mm and eight inches. Range of these weapons is about eighteen miles. Range of the Army's four surface-to-surface missiles extends from about three to 400 miles. They include the new Lance missile as well as the Pershing, Honest John, and Sergeant. The last two are approaching obsolescence and are being replaced gradually by the self-propelled Lance. The size and yield of the warheads of these missiles can be adjusted to specific tactical needs.

AEC's efforts to "clean up" tactical nuclear weapons have reached a level where "it would be safe for friendly troops to enter combat areas within about ten minutes after a nuclear bombardment if air bursts are used. If ground bursts are used, it may be necessary to detour the crater areas," according to General Giller.

While the yield of tactical nuclear weapons can't be disclosed for security reasons, General Giller said that the smallest nuclear weapon in the US inventory is "larger [in yield] than the largest conventional bomb," the 25,000-pound bomb used by the US Army Air Forces in World War II, but is still in the kiloton range.

One of the most closely held but vital activities of AEC is surveillance and assessment of Soviet and Chinese nuclear weapons capabilities. General Giller commented: "We really can't tell too much from monitoring Soviet underground tests. Of course, we know that they tested a three- to six-megaton device last year and assume that there is some system that they plan to put this warhead on. But we don't know yet what kind of system that might be. Normally, it is necessary that we get a look at the actual hardware before we can give specific estimates." ■

The OVERLORD Air Dispute

On this thirtieth anniversary of D-Day, an Air Force historian reconstructs the controversy that reverberated all the way to Roosevelt and Churchill over how strategic airpower would be used in preparation for and support of the Allied assault on occupied Europe. Gen. Carl A. "Tooey" Spaatz, supported by his senior commanders and by RAF strategic air commanders, fought through a compromise that preserved the integrity of US strategic air doctrine and destroyed the Luftwaffe, in an indispensible . . .

Prelude to D-Day: THE BOMBER OFFENSIVE

BY HERMAN S. WOLK

IT HAD taken several years, not without setbacks and frustration. The logistical problem was immense —from artillery and bulldozers to steel mesh mats and ambulances. All of it—and the men—to be transported across the Channel. First to fight for a foothold. Then to push into the Continent, over which Hitler's malignancy had spread, drawing the democracies into a struggle to the finish.

The Allies had massed 5,000 ships—landing craft and midget submarines to battlewagons. American air strength alone was 13,000 aircraft, including 4,500 bombers. It was the largest, most complex military operation in history. In early May 1944, the date had been set for June 5, but by the night of June 3 the weather had turned overcast and stormy and the invasion had to be postponed one day. Though the weather remained chancy, the monumental operation could not be held off longer.

June 6, 1944, would be D-Day for Operation OVERLORD, the invasion of Nazi-held Europe. Gen. Dwight D. Eisenhower, Supreme Commander, Allied Expeditionary Force, made this decision. Though the armada was ready, what lay ahead? Would the weather—at best marginal—hold? How stiff would enemy resistance be? Could beachheads be established and held? Could air cover be maintained? Would OVERLORD, on which so much depended, succeed?

From a vantage point of thirty years, all is clear. Facts and statistics are recorded. The hammer thrust succeeded. The 82d and 101st US Airborne Divisions staged the largest airborne operation ever, dropping into the Cotentin Peninsula; the First US Army assaulted Utah and Omaha beaches; the Second British Army hit Gold, Juno, and Sword beaches in Normandy. Casualties were high at Omaha—2,500 men. The American airborne

ost about the same, the British about 3,000, the Canadians almost 1,100 men. The total was more than 9,000, one-third killed. But six weeks later, a front had been established, setting the stage for "breakout and pursuit" in the summer. For Nazi Germany, OVERLORD signaled the opening of the last act.

These are historical facts, statistics, and judgment. They mask controversy. Thirty years later, disagreement remains about OVERLORD air planning and about which air campaigns contributed most to success. There is agreement on one point: Prior to June 6, 1944, the Allies had won the air battle, ensuring the success of OVERLORD. On D-Day, the Luftwaffe was hardly seen over the battlefield. The story of how the Luftwaffe was defeated and formulation of tactical and strategic air plans for OVERLORD and its aftermath reflect deep conflict.

Conflicting Concepts of Air War

Origins of this controversy antedate World War II and are rooted in an enduring air dispute. In the 1920s and '30s, there were American airmen who held that air had an independent mission, apart from ground and naval support. Such independent operations would circumvent trench carnage. However, the War Department believed that the First World War demonstrated paramountcy of ground forces.

Prior to World War II, the heavy bomber had not been combat-tested. Strategic bombing was still only theory. The War Department General Staff thought the bomber ancillary. Nonetheless, in April 1937, Maj. Gen. Frank M. Andrews, Commanding General, GHQ Air Force, expressed a view characteristic of Air Corps bomber advocates. The basic element of airpower, Andrews said, was bombardment aviation, which should be organized as "a relatively self-contained entity." Future capabilities of bombardment craft "challenge the imagination." Bombers would be able to destroy "vital organs that exist in the national body."

Bomber development progressed —the XB-17 flew in July 1935 from Seattle to Dayton—and instructors at the Air Corps Tactical School at Maxwell Field, Ala., formulated the concept of high-altitude, daylight precision bombing without fighter escort. This became the American strategic bombing doctrine.

Meantime, war was imminent. In September 1938, the Nazis terrorized the Czechs. President Franklin D. Roosevelt became alarmed and on September 28 summoned civilian and military leaders, including Maj. Gen. Henry H. "Hap" Arnold, Acting Chief of Air Corps. Only a few days earlier, Arnold had met Harry Hopkins, Roosevelt's adviser and "conscience." Arnold had impressed him. Hopkins had then briefed the President on air requirements. Then, at this meeting, Roosevelt demanded 10,000 planes to start and the establishment of an aircraft production goal of 20,000 within a year. Arnold later recalled that, on September 28, 1938, the Air Corps "achieved its Magna Carta." And from that day, Hopkins and Arnold cultivated a special relationship, the President's confidant serving as a conduit between General Arnold and President Roosevelt. Two days later, Prime Minister Neville Chamberlain signed the Munich pact.

In the fall of 1939, after Hitler attacked Poland, General Arnold, now Chief of Air Corps, established an Air Intelligence Section. The Strategic Section of this unit began to determine critical elements of Germany's war industry. When Roosevelt requested the Secretaries of War and Navy to establish requirements, Arnold's Air War Plans Division prepared an Air Annex to the War Department's reply. AWPD-1 was put together by Col. Harold L. George (Division Chief), Lt. Col. Kenneth N. Walker, and Majs. Laurence S. Kuter and Haywood S. Hansell. It was submitted in August 1941, outlining a sustained air offensive against Germany. Priority targets included electric power, transportation, petroleum, and synthetic oil, with neutralization of the German Air Force a priority "intermediate" objective.

When Britain went to war, air observers Brig. Gens. Carl A. "Tooey" Spaatz and George C. Kenney went to England, and substantive Anglo-American planning began. Presaging American entry into the conflict, the ABC-1 report was issued on March 27, 1941, forecasting an air offensive and invasion of Europe. Also, since 1939, the War Plans Division of the War Department General Staff had been working on "Rainbow" plans, and, in April 1941, Rainbow No. 5 outlined an Atlantic/European offensive with a "strategic defense" in the Pacific. This plan provided that in war the air forces would conduct "offensive air operations from bases in the British Isles against German military power at its source." In May, it was approved by the Joint Board and in June by the Secretaries of War and Navy.

Even after Pearl Harbor, US leaders agreed with the British that first priority must be Germany's defeat. "I am convinced," said General Arnold, now Commanding General Army Air Forces, "that a blow against Germany is of first importance." The means, he emphasized, would be "precision daylight bombing . . . as planned by the Eighth Air Force and for which it is equipped and trained."

But these plans could not be immediately implemented. It would take time to build the Army Air Forces and to gain combat experience. Poor weather and the German Air Force were proving difficult obstacles. Then, in November 1942, the invasion of North Africa (TORCH) significantly dispersed bomber strength. It had also changed command arrangements. General Eisenhower had summoned Spaatz, now a major general, from his Eighth Air Force command to Algiers to be his Deputy Commander in Chief for Air, and Maj. Gen. Ira C. Eaker had become Eighth Air Force commander. Spaatz's forces were merged with British units, all under overall command of the RAF's Air Chief Marshal Sir Arthur Tedder.

Arnold firmly believed that German morale could be broken and

that, should an invasion be necessary, Allied troops would then have a much less difficult time. The high-altitude precision daylight bombing concept, from unescorted formation, had yet to be applied effectively. In September 1942, this doctrine formed the basis for AWPD-42, describing a combined bomber offensive, the AAF bombing in daylight, area bombing by the RAF at night. Top-priority targets were submarine yards, transportation, electric power, oil, aluminum, and rubber. Again, German aircraft production was a priority intermediate goal.

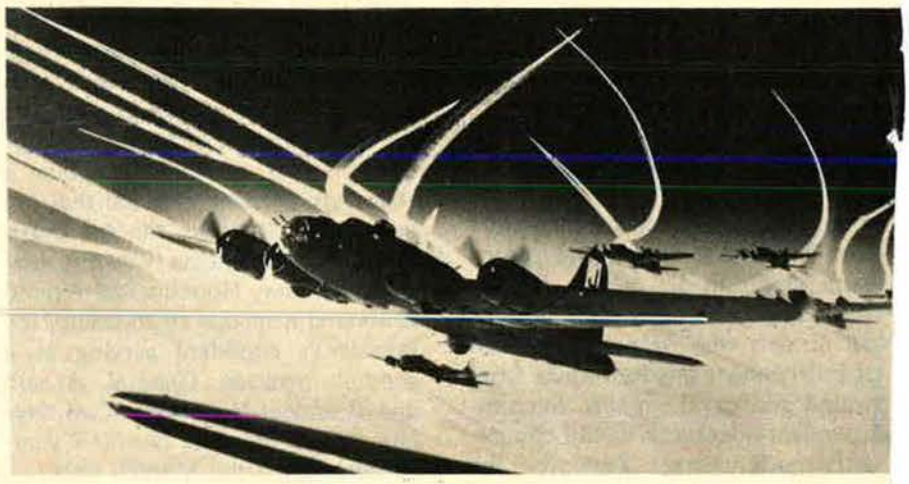
Casablanca and the Combined Bomber Offensive

Meanwhile, the British exerted pressure on the Americans to join in night bombing. Air Chief Marshal Sir Arthur T. Harris, Bomber Command head, argued that, if Eighth Bomber Command would join the RAF at night, Germany could be knocked out of the war. Thus, at the Casablanca Conference in January 1943, American airmen were forced to defend daylight bombing before their air forces had been built up.

General Arnold called his commanders to this conference—Lt. Gen. Frank Andrews, the Commander of US Forces in the Middle East; General Spaatz, commanding the Allied Air Force in North Africa; and General Eaker, Eighth Air Force Commander. Arnold talked with Prime Minister Winston Churchill "long and hard" about continuing daylight bombing, "why we figured the Germans could not stop us . . . how we figured our formations of B-17s and B-24s, subsequently with long-legged fighters, could protect themselves against German aircraft." Andrews and Spaatz also talked with Churchill.

Then General Eaker emphasized to the Prime Minister that Eighth Bomber Command had been held back by inexperienced crews, lack of long-range escort, commitment to TORCH, and by poor weather. Nonetheless, the Eighth's losses in daytime were lower than the RAF's at night. Day bombing would augment the night effort; it was more accurate—especially against small targets—and would prevent the Germans from resting. Fires set by day would guide the British at night—an around-the-clock offensive. Eaker argued forcefully that the Eighth was trained and equipped for day operations; should it operate at night, losses would rise.

Churchill wrote that General Eaker presented his case "with powerful earnestness . . . skill, and tenacity." The Prime Minister accepted his argument, and Arnold recalled that "we had won a major victory, for we would bomb in accordance with American principles, using the methods for which our planes were designed."



By late 1943, long-range fighter escort made deep penetration to vital German targets less costly.

On January 21, 1943, the Combined Chiefs of Staff issued the Casablanca Directive for a joint bomber offensive, the objective being "the progressive destruction and dislocation of the German military, industrial, and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened."

This directive established such primary targets as submarine yards and bases, aircraft industry, transportation, oil, and other industries. Subsequently, the Combined Chiefs approved Operation "Pointblank," against the German Air Force identifying a target that, if crippled would greatly assist the Allied invasion. The Allies thus continued strategy for which each was suited—the British bombing at night, the Americans by day. But Eighth Bomber Command was still restricted by the number of available bombers and crews and by overcast and low cloud cover.

During the second half of 1943, American bombing operations increased. In August, the Ninth Air Force in North Africa struck oil refineries at Ploesti, Romania. Though a substantial part of Ploesti's refining capacity was destroyed, more than fifty aircraft and some 500 airmen were lost. Then, attacks on Regensburg/Schweinfurt (August) and Schweinfurt (October), in which the Americans lost 120 bombers and hundreds of crewmen, brought on a crisis. These losses were prohibitive.

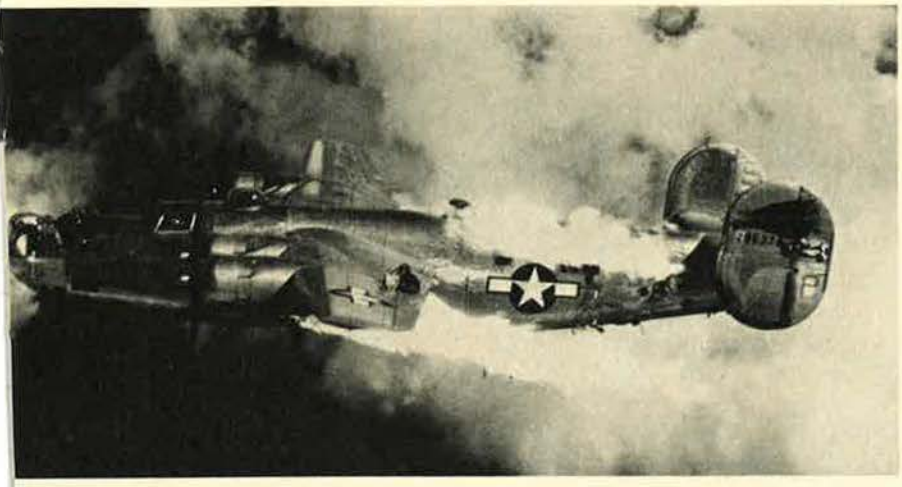
Contrary to accepted strategic doctrine, Eaker was now convinced that long-range fighter escort was the answer. During the week of the October Schweinfurt mission, the Eighth lost 148 planes. As a result, deep raids were canceled. But, on December 13, 1943, Kiel and Hamburg were struck, and, for the first time, P-51B Mustang fighters accompanied the bombers. Equipped with auxiliary drop tanks, they per-

ormed exceptionally well. Subsequently, the turning point was "Big Week" in February when the Germans lost more than 500 fighters and pilots. It was the beginning of the end for the Luftwaffe. During February–April, at the direction of General Doolittle, now commanding the Eighth Air Force, Mustangs and P-47 Thunderbolts of Maj. Gen. William E. Kepner's Eighth Fighter Command sought out the Luftwaffe and gained air superiority, thereby assuring success of both the bomber offensive and the invasion.

By the time long-range fighters had achieved control of the air, General Eaker had left his Eighth Air Force command (December 22, 1943) to become Air Commander in Chief of Mediterranean Allied Air Forces. He wrote Arnold that it was "heartbreaking to leave just before the climax." Spaatz returned to England from the Mediterranean to command the US Strategic Air Forces in Europe under Eisenhower, who was to become Supreme Allied Commander, Allied Expeditionary Force. Air Chief Marshal Tedder became Eisenhower's deputy and Air Commander in Chief for OVERLORD. Maj. Gen. James H. Doolittle came from the Mediterranean to command the Eighth Air Force. Brig. Gen. John K. Cannon took Spaatz's command at Twelfth Air Force, and Maj. Gen. Nathan F. Twining took over Fifteenth Air Force with its additional fifteen heavy bomber groups (originally scheduled for the Eighth) to be used against Pointblank targets, complementing bomber operations from England.

Who Controls Strategic Air?

Meanwhile, controversy surrounded the role of airpower in OVERLORD. The invasion would fail unless air elements were effectively employed. Who would command these air forces? Against which target systems? Involved were command authority and strategy. There was no shortage of strongly held views.



A B-24 mortally wounded by enemy fighters. US losses were heavy, but by D-Day the Luftwaffe was ineffective.

Under Supreme Commander Eisenhower, Air Marshal Sir Trafford Leigh-Mallory, Commander of Fighter Command, had been appointed Commander in Chief of the Allied Expeditionary Air Force. The AEAF, with light bombers from the US Ninth and RAF Second Tactical Air Forces and fighters from Air Defence of Great Britain, would provide tactical support for OVERLORD. Leigh-Mallory commanded no heavy bombers. He planned to get this support from Spaatz and Harris. This would cut into strategic bombing resources.

However, Leigh-Mallory had to protect the cross-Channel operation and then prevent the Germans from moving their forces to confront the Allies on the beaches. Failure in either of these operations would prove disastrous. Thus, he formulated plans for air cover to protect the armada and also to attack German air bases in France and the French railway system. But Leigh-Mallory's AEAF did not have the air strength to do this. The "railway plan," especially, required heavy bombing capacity. He needed Spaatz and Harris.

Harris wanted to press his area attacks on German towns. And Spaatz, with long-range escort, was determined to send daylight bombers deep into the Reich. The primary target should be synthetic oil. The US Strategic Air Forces' commander argued the Germans would defend these targets and provide the opportunity for American fighters to destroy the Luftwaffe. Insufficient fuel would affect German transport and industry and, at the crucial point, the enemy's ground forces. Spaatz thus proposed a strategy to cripple Germany's war economy and her ability to contest the invasion.

Tedder, the Deputy Supreme Commander, strongly supported the railway plan, believing it should include attacks on repair facilities, main lines, and sidings. General Eisenhower, having admired Tedder's performance in the Mediterranean, endorsed this plan, convinced it was necessary to OVERLORD's success. "There is no other way," he emphasized, "in which this tremendous air force can help us, during the preparatory period, to get ashore and stay there."

Eisenhower staked everything on his position, declaring that because he was invested with overall responsibility he could not accept anything less than "complete operational control." Should he lose on this issue, he would withdraw from command. Nonetheless, Air Chief Marshal Sir Charles Portal, Chief of the Air Staff, thought the railway plan would avail little. Harris objected that strategic air had other tasks besides OVERLORD, and the British Chiefs stressed that bombers should

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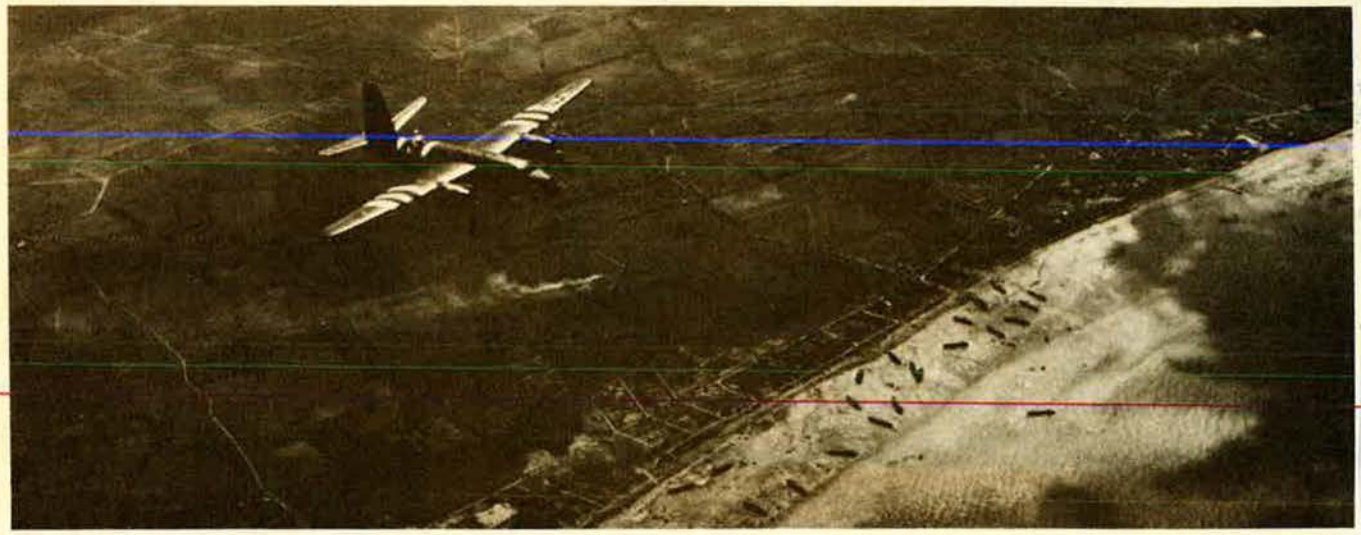

Tactical bombers and fighters, augmented by the heavies, isolated the beaches and supported Allied landings.

remain directly responsible to the Combined Chiefs. Spaatz agreed, not wanting these planes diverted, and emphasized his point by sending for Eaker, who advised Eisenhower not to adopt the transportation plan. The real issue, then, was Eisenhower's control of strategic air elements.

Nor was Churchill to acquiesce in turning over heavy bombers to Eisenhower. For his part, General Arnold concluded it would be unwise for him to oppose Eisenhower on an issue the Supreme Commander felt so strongly about. Therefore, though Spaatz could press his stand, Arnold took the position that this was a matter for Eisenhower to decide. In late February, Churchill made his objections known to Eisenhower and Portal. On March 10, 1944, Portal informed the Prime Minister that a compromise had been reached whereby Tedder would develop the overall air plan, advised by Spaatz and Harris, with the tactical plan handled by Leigh-Mallory under Tedder's supervision. Additional requests from Eisenhower for more bombers than were provided for in original plans would have to be approved by the Combined Chiefs. The way now apparently clear, on March 25 Eisenhower ruled that heavy bombers would be used against the railway system in northern France, Belgium, and western Germany. Eisenhower and Tedder also decided to use interdiction strikes prior to D-Day and to permit Spaatz to attack synthetic oil. This wise compromise would prove to be crucial.

By April, however, Churchill and his War Cabinet had nagging thoughts about how many French civilians might be killed or injured. On April 3, the Prime Minister wrote to Eisenhower that the Cabinet had taken an adverse view of the recommendation "to bomb so many French railway centers, in view of the fact that scores of thousands of French civilians—men, women, and children—would lose their lives o be injured." Eisenhower refused t yield. "We must never forget," h replied, "that one of the fundamental factors leading to the decision for undertaking OVERLORD was the conviction that our overpowering Air Force would make feasible an operation which might otherwise be considered extremely hazardous, if not foolhardy."

Nevertheless, though Portal advised Churchill that the scope of the rail campaign had been reduced, the Prime Minister remained reluctant. On April 29, he told Eisenhower the Cabinet was still against it. He emphasized that the plan had been opposed by Spaatz, Harris, the War Office, Ministry of Economic Warfare, Joint Intelligence Committee, and by Field Marshal Alan Brooke, who doubted its effectiveness, based on experience in Italy.

On May 7, Churchill wrote to President Roosevelt, suggesting they "share responsibilities" for settling this dispute. Roosevelt replied unequivocally: "However regrettable the attendant loss of civilian lives, I am not prepared to impose from this distance any restriction on military action by the responsible commanders that in their opinion might militate against the success of OVERLORD or cause additional loss of life to our Allied forces of invasion." The Prime Minister finally acquiesced, but not without pain.

The attrition rail campaign went ahead. As D-Day neared, Allied air forces flew interdiction strikes against bridges, viaducts, and rolling stock. In three months of attrition attacks, the Eighth Air Force and Bomber Command conducted more than twenty thousand sorties and dropped some 65,000 tons of bombs on eighty targets. Rail traffic was much reduced prior to D-Day. However, the effect on movement of German forces and supplies was difficult to judge accurately. French civilian casualties were substantially lower than anticipated.

Interdiction operations by the US Ninth and British Second tactical air forces were also successful. From late May to D-Day, the Ninth destroyed eighteen of twenty-four bridges across the Seine between Paris and Rouen. As between interdiction and attrition, with hindsight it seems the campaign against bridges probably helped the Allies more than strikes on the rail network.

The Heavies Hit German Oil

Though heavy bombers of the Eighth and Fifteenth Air Forces and the RAF Bomber Command had been diverted to OVERLORD, it will be recalled that Eisenhower's decision had left the door open for Spaatz to strike synthetic oil. During May, the Eighth pounded synthetic-oil plants while the Fifteenth hit oil refineries at Ploesti and in Austria, Yugoslavia, and Hungary. On May 12, General Doolittle sent 935 heavy bombers—escorted by Eighth and Ninth Air Force and RAF fighters—against synthetic-oil plants at Zwickau, Merseburg-Leuna, Brüx, Lützkendorf, Böhlen, and other towns. Almost 200 German fighters attacked savagely, but were beaten off by P-47s and P-51s. Although forty-six Eighth Air Force bombers and ten Allied fighters were lost, the Luftwaffe suffered another severe setback. Moreover, oil plants were heavily damaged, and in Merseburg-Leuna a building was destroyed in which the Germans had been conducting heavy-water experiments for their atomic bomb project.

This excellent mission was noteworthy because it demonstrated the Luftwaffe would desperately defend crucial targets. By this time, the Luftwaffe had already been badly hurt. In May, Spaatz's oil campaign would break its back, "flushing out" fighters and squeezing off its fuel supply. By August, all German forces would be critically hampered by lack of fuel. Much later, Albert Speer, Germany's Minister of Armaments and War Production, noted that the Allied campaign against German oil had proved decisive. Moreover, in his memoirs—published in 1970—Speer wrote that the American idea to selectively destroy a few critical industries had been correct all along. Once this plan had been adopted early in the war, he emphasized, it should have been rigorously pursued rather than placed on the back burner. "The idea was correct," Speer wrote, "the execution defective."

Could a round-the-clock Allied strategic air offensive against Germany's war economy and morale have collapsed the Nazi state within a reasonable period without an invasion? The answer to that question must forever remain speculation.

From the beginning, American leaders had planned an invasion under code names SLEDGEHAMMER and BOLERO. An invasion was always top priority. Gen. George C. Marshall had been especially insistent, defending this idea against Churchill's concept of assaulting the Nazi periphery. And, lest these leaders forget, Stalin was always prepared to remind them. Ever since late 1941, he had made it a point. Churchill himself never forgot the brutal lecture he received in Moscow from the Soviet dictator in July 1942. After the Prime Minister explained why a cross-Channel operation had to be postponed, Stalin berated him and concluded that "any man who is not prepared to take risks cannot win a war."

Not that Roosevelt and Churchill (or Generals Marshall and Eisenhower) looked adversely at the role of airpower. That idea would be wrong in the extreme. They recognized that air had a pivotal role to play—but in the last analysis, as they saw it, primarily in support of ground operations. They would not provide the resources nor approve a plan to concentrate on bombing Germany out of the war without invasion.

D-Day—Allied Air Supremacy

So denied their ultimate opportunity, Spaatz and Harris did their best to support OVERLORD. And the bomb units—airpower generally—made a decisive contribution to the success of this massive invasion. On D-Day, the Luftwaffe fighter commander on the invasion coast had only eighty operational aircraft, and the German Air Force could mount only about 250 combat sorties. American aircraft alone mounted over 8,700. In OVERLORD, the German Air Force was not a serious challenger. The Allied air forces had already won this battle. "If you see fighter aircraft over you," Eisenhower told his invasion forces, "they will be ours."

Air superiority for OVERLORD had been won early in 1944 when the great bomber fleets, escorted by long-range fighters, assaulted critical targets on the Continent and the Luftwaffe rose to the challenge, to be beaten back and finally defeated. Gen. Carl Spaatz had been insistent—and correct. The enemy would fight for oil, and the enemy would lose his fighters, his crews, *and* his fuel.

Ultimately, the war was won everywhere. On the Eastern and Western fronts. On land, sea, and in the air. Though the historian does not search for certainty, there can be no doubt of airpower's decisive contribution.

Strategy and assessments aside, one is most impressed by the men. By those who went up in planes to fight. They persevered. Many never came back. These airmen had extraordinary courage. There will never be another battle like it. ■

Lt. Gen. Carl A. Spaatz (center) commanded US Strategic Air Forces in Europe from January 1944 until the war's end. In February 1946, he succeeded Gen. H. H. Arnold as Commander, AAF, and in September 1947 became the first Chief of Staff of the USAF. Lt. Gen. Ira C. Eaker (right), who commanded Mediterranean Allied Air Forces at the time of the invasion, later became Deputy Commander of the AAF and Chief of the Air Staff. At left, Maj. Gen. Nathan F. Twining, then 15th AF Commander, later (1953–57) USAF Chief of Staff.

With the perspective of thirty years, two of the principal figures in the controversy over the use of strategic airpower in Europe discuss some elements of one of the crucial decisions of World War II . . .

REFLECTIONS ON OVERLORD

BY GEN. CARL A. SPAATZ, USAF (RET.)
AND
LT. GEN. IRA C. EAKER, USAF (RET.)

We have read Herman Wolk's account of the OVERLORD air dispute and find it essentially accurate in reporting the facts and sound in its conclusions.

He has discussed the genesis of the air plans, described the operations, and assessed the results achieved—all briefly but fairly. His research was thorough, and his writing skill again demonstrated.

While it is now clear that it was unnecessary to transfer the heavy bombers from their strategic missions (the attack on German war industry and the destruction of the Luftwaffe) to support the Normandy invasion, that was not the prevailing view at the time.

All of us, every commander of land, sea, and air forces, agreed that all Allied strength must be available to General Eisenhower in the critical phase of the cross-Channel operation and until the invasion forces were safely ashore. The discussion arose as to when and what mission the heavy bomber should undertake in supporting OVERLORD. Wolk covers this dispute accurately.

Eisenhower and Tedder had been in the African campaign for more than a year before OVERLORD and were not, therefore, completely current on the Combined Bomber Offensive, the campaign RAF Bomber Command and the Eighth US Air Force had been waging, and the results achieved.

We believe that Gen. George C. Marshall, Chief of Staff of the US Army, deserves more credit for the Allied air achievement than he has been generally accorded. It was he who gave the US air arm parity with land and sea forces. He was also probably more responsible for the approval of the air war plans, including the Combined Bomber Offensive, than any other leader.

When he first came to the US 8th Bomber Command in England in April 1942, Marshall said that he did not believe that any cross-Channel operation would succeed until the German air force had been defeated. We assured him our plans included the destruction of the Luftwaffe.

At the Casablanca Conference a year later, he again asked if the German air force would be a serious threat for the Allied invasion next year. We told him that if the Combined Bomber Offensive was approved and supported, the Luftwaffe would not seriously interfere with the cross-Channel operation.

Wolk correctly quotes Albert Speer as speculating that if the Allies had pressed the attacks on key Nazi industry, the war could have been won a year earlier. What Speer did not appreciate was that we were operating to the maximum with the limited air resources then available.

Perhaps it serves no useful purpose now, except on possible future strategic planning, to speculate what would have transpired if we had had the Allied air forces available in 1943 that were ultimately available in June 1944.

But it is entirely possible that Albert Speer was right and that the war could have been ended a year earlier, saving a million lives, more than 100,000 of whom were Allied soldiers, sailors, and airmen.

Mr. Wolk deserves high praise for concluding his survey of airpower in OVERLORD by paying a deserved tribute to the magnificent airmen whose incredible courage, skill, and fortitude destroyed the Luftwaffe and made Allied air victory possible.

A few weeks after the D-Day landings, Lt. Gen. James H. Doolittle, Eighth Air Force Commander, played host to Britain's King George VI, Queen Elizabeth, and their eighteen-year-old daughter, Princess Elizabeth, who christened a new B-17 Flying Fortress Rose of York.

On June 6, 1944, Jimmy Doolittle was in the air over the invasion beaches in a P-38, to observe the work of his Eighth Air Force bombers. Here is his recollection of . . .

D-DAY: ALMOST BEYOND DESCRIPTION

BY LT. GEN. JAMES H. DOOLITTLE, USAF (RET.)

On June 6, 1944, Maj. Gen. E. E. "Pat" Partridge and I took off from Bovingdon, England, at dawn, in two P-38s to observe the effect of the heavy bomber—Eighth Air Force—attack on, and landward from, the invasion beaches.

We flew in two P-38s because this was an easy plane for our air people and ground troops to identify as ours.

Pat flew my wing.

We particularly wanted to personally observe the bombing, as I was the Commander and Pat the Deputy Commander of the Eighth.

We flew along with the bombers, above the overcast, which was almost solid.

The bombing, which was mainly by radar due to the heavy cloud cover, was very effective, but not as effective as it would have been had we dared to bomb closer to our own troops.

I had put in a safety factor to assure that we avoided any chance of one or more of our bombs falling seaward from the beaches and on our own assembled shipping.

While we couldn't observe much of the bombing, I got the impression that the division, wing, and group commanders had each put in an additional safety factor.

As a result, our troops had to storm through a heavily defended area, which probably we would have been able to soften had visual bombing been possible.

After the bombing, we started back, intending to fly northwest until we could get under the overcast.

I saw a hole and suddenly dove down through it.

Pat, at the time, was having difficulty with his oxygen system and had his head in the cockpit trying to correct it.

As a result, we were separated and didn't get together again.

Upon coming out of the overcast, I flew back to the invasion beaches and flew then from one to another, observing the landings.

The scene of the invasion from the air—I flew at about 1,500 feet—was spectacular.

I saw our troops and equipment land with occasional direct enemy artillery hits on some of our LSTs and LCPs.

It was an ever-changing, dramatic, action picture almost beyond description.

My trip from Bovingdon to the front, observation of the landing, and return to Bovingdon took three hours. I was probably over the beaches for an hour and a half.

Immediately upon return to England, I reported to General Eisenhower and gave him the first eyewitness report of the invasion's progress.

The September "Anniversary" issue of AIR FORCE Magazine will be distributed to those attending AFA's 1974 Aerospace Development Briefings and Displays. In addition to this bonus readership, all advertisements in this issue will be prominently displayed in our "Industry Salutes the Air Force" exhibit at the entrance to Exhibit Hall. Closing for advertising reservations is August 2. Why not join us? It is a good advertising buy!

AIR FORCE
MAGAZINE

MIA/POW Action Report

By William P. Schlitz
ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

Ex-POWs Form Group

Calling themselves "Nam-POWs Inc.," a number of former Southeast Asia POWs have organized a fraternal and charitable association bent on assisting fellow MIA/POWs and their families.

"The idea for creation of the group was conceived and approved by the POW group during the 'dark ages' of confinement, when treatment by the Communists was at its worst," Nam-POWs said in announcing its formation.

Membership will be composed of a cross section of Air Force, Navy, and Marine Corps airmen of the "4th Allied POW Wing," the designation the men gave the organization they established to maintain military discipline and morale under conditions of captivity in Hanoi.

President of the new association is Air Force Col. George E. Day, the subject of an interview—along with former prisoner Robinson Risner (now a brigadier general)—that appeared in the June 1973 issue of this magazine. Colonel Day, an F-100F Misty FAC flying out of Phu Cat AB, South Vietnam, was shot down on August 26, 1967.

Nam-POWs Vice Presidents are Navy Capt. Howard Rutledge and Cmdr. Gerald Coffee. Captain Rutledge was shot down on November 28, 1965, and Commander Coffee on February 3, 1966.

Both Colonel Day and Captain Rutledge are among POWs who have written books about their experiences. *Return With Honor,* by Day, relates, among other things, the Colonel's brief escape from his captors, while Rutledge's *In the Presence of My Enemies* is a tribute to the strong faith that enabled him to endure four years of solitary confinement.

According to Nam-POWs, membership in the organization is not automatic. Applications should be submitted to Capt. Howard Rutledge, 6335 Mercer St., San Diego, Calif. 92122, or to corporate offices at 7734 N. 46th Drive, Glendale, Ariz. 85302, site of the POW association's incorporation. Membership is restricted to POWs with honorable service, Nam-POWs said.

Before his retirement, Col. Joseph G. Luther, left, chats with ex-POW Maj. Murphy N. Jones. See below.

In Memory of MIA/POWs

Ceremonies dedicating a MIA/POW Memorial took place this spring at the Freedoms Foundation, Valley Forge, Pa.

The memorial is in the form of a 250-pound wreath that has been cast from 7,000 MIA/POW bracelets worn during the Vietnam conflict by people from every state in the union. The stylized wreath, "representing the races of man and the oneness of the world," is mounted on a seven-foot-high, five-ton pedestal of polished gray granite. All labor and materials involved in creating the memorial were donated.

Ellen M. Ewing, of Spokane, Wash., originated the MIA/POW Memorial idea and initiated the all-volunteer project. Freedoms Foundation was selected unanimously by a League of Families committee as site of the memorial.

A MIA/POW Family Friend Retires

Retirement ceremonies took place recently for Air Force Col. Joseph G. Luther, involved from the outset of American participation in the Vietnam War with the problems of the troubled MIA/POW families.

Since 1963, Colonel Luther served as chief of the Casualty Division of the Air Force Military Personnel Center, Randolph AFB, Tex.

The Casualty Division—and Colonel Luther personally—through the years had served as focal points of assistance and service to the families of Air Force people killed in action or MIA, wounded, seriously ill, or captured.

Colonel Luther had been a part of USAF's casualty program since 1959. On March 23, 1961—the day the first Air Force member was reported MIA in Southeast Asia—he was a Casualty Duty Officer assigned to the Pentagon.

"If you can do something for somebody, you can't help feeling a tremendous amount of self-satisfaction. With these people—the wives, children, and parents of prisoners and MIAs—it was an overwhelming experience," Colonel Luther said.

During the SEA conflict, Colonel Luther's office gave daily help to the families of 325 eventually released USAF POWs, more than 4,000 wounded, and more than 2,000 who died. For the families of 708 Air Force men still unaccounted for and carried MIA, the work continues.

Colonel Luther, on retirement, was presented the Distinguished Service Medal, USAF's highest peacetime award. ■

The Regulars of the nation's military establishment have long had a security blanket in common with the college professor—tenure. Now, however, the Pentagon is moving toward authority to ease out Regulars when force reductions dictate. The big question concerns . . .

TENURE: Will the 'Untouchables' Be Touched?

BY ED GATES

CONTRIBUTING EDITOR, AIR FORCE MAGAZINE

TAMPER with tenure?

That's what the Pentagon wants to do, via a Defense Department-sponsored proposal to remove some of the job security that Regular officers, with several exceptions, have enjoyed for many years.

The new plans could touch off strong dissent among members of the Regular establishment. A similar brouhaha occurred more than a decade ago, under the controversial "White Charger" program, when the Air Force involuntarily retired nearly 800 senior Regular officers several years before their normal exit points. The Navy undertook a like program at the same time.

Now, the Pentagon aims to ease out almost 1,100 senior Regular officers of the three major services, plus 1,000 to 1,200 company-grade Army Regulars. All this follows in the wake of increasing USAF efforts in recent years to secure authority to early-retire Regular colonels and lieutenant colonels who have slowed down and aren't carrying their weight.

Today, all the services, laboring under a succession of severe personnel cuts imposed by DoD and the Congress, feel the need to "spread the impact" of these reductions "into the more senior groups," the Pentagon said recently.

Current law normally does not permit the involuntary separation of most young Regular officers. Or the early retirement of senior Regulars before the twenty-eight to thirty years' service points, other than "for cause" or for substandard duty performance. They're untouchable; they enjoy tenure.

Accordingly, the modest officer reduction in force (RIF) the Air Force is currently undergoing and the huge RIFs Army recently endured have struck only at non-Regular lieutenants, captains, and a few majors. They comprise the only RIFable group. Army has axed 10,000 already and is planning another purge of about 2,200 excess officers in the near future.

Army says its remaining active-duty non-Regulars have been so "finely sifted" that few remain who warrant involuntary release. So, that service has asked Congress to let it take much of the upcoming cut from the ranks of Regular captains and below.

Although Air Force and Navy are not mentioned in the proposal, the lawmakers may well give them the same authority, informed sources indicate.

The Air Force, meanwhile, is involved in a 950-officer RIF this month and next. And it has sched-

"As Air Force RIFs mount, so do the complaints from members of the dwindling non-Regular officer force."

uled one nearly double that size for late in Fiscal Year 1975. If further cuts are required after that, it is possible Air Force would need authority to "go after nonretirement-eligible Regular officers," a Hq. USAF personnel authority told AIR FORCE Magazine.

As of now, no young Regular officer RIF is planned. Air Force still has a modest number of young non-Regulars to "work with." But the official wouldn't rule out the likelihood that sometime later it may find it necessary to follow Army's lead.

As Air Force RIFs mount, so do the complaints from members of the dwindling non-Regular officer force. Not surprisingly, they bitterly object to shouldering the full RIF load.

The Rationale for Tenure

The tenure rules vary slightly among the services. Navy and Marine Corps Regular O-5s are protected until twenty-six years of commissioned service and two passovers to O-6. Navy captains and Marine colonels are retained until thirty years of service and two passovers to star rank.

Air Force and Army Regular lieutenant colonels, under current statutes, are not mandatorily retired until they complete twenty-eight years' service. A permanent Regular colonel stays until completion of thirty years, or five years in grade, whichever is later.

All Regular officers are protected against any but very serious shortcomings, in much the same manner that university faculty members enjoy academic tenure. Getting rid of a tenured professor, university administrations and alumni groups have discovered, can be next to impossible.

The aim of tenure is to permit members of a highly selected professional group to concentrate on their specialties. The usual pressures that build up from job insecurities are absent. In the military service, of course, the normal officer career lasts only until age fifty to fifty-five. It's planned that way to keep the officer corps relatively young and promotions flowing for all grades.

Regular military officers survive a rugged screening process. Those who take the Academy route encounter stiff competition to get in—and through—those schools. They spend four difficult years prepping for eventual positions of leadership as career officers.

Graduates of ROTC and other commissioning programs who later take Regular commissions win them in head-to-head competition with their contemporaries in the Reserves. Officialdom has long held, and quite properly, that this procedure assures that the Regular component has an edge in quality.

"If Regular officers on the average don't outshine non-Regulars, in performance and potential, there's something drastically wrong with the selection system," one official told AIR FORCE Magazine recently.

The Regular, at any rate, has enjoyed genuine job security. In the Air Force and Army he is not removable except for physical disability, very poor job performance, or severe disciplinary or moral reasons. There is one less serious, minor weeding-out avenue: the promotion passover route, although it is not considered substandard duty performance.

Air Force is planning to tighten up its passover machinery, according to Lt. Col. L. M. Andersen, Chief of the Promotions and Separations Branch, Hq. USAF. This may mean tougher selection screening by future permanent-Regular officer promotion boards.

"There will be more emphasis in the permanent promotion system to further ensure that the Regular-force quality remains high," is the way Colonel Andersen puts it.

Last year, permanent-Regular Air Force boards chose eighty percent of the officers vying for lieutenant colonel, ninety-three percent looking for permanent major, and ninety-five percent of those eyeing permanent captain.

Impact of the DoD Proposal

The Defense Department calls its proposal to forcibly retire senior Regulars, embodied in H.R. 11113, a "selective continuation" program. That, of course, is a foolish misnomer that deceives no one and insults the intelligence of the officer corps. Its only purpose is to remove officers.

H.R. 11113 went to Capitol Hill late last year, and Congress ignored it. This spring, DoD has applied pressure to get it moving. One ploy is a special press release plainly lobbying for early enactment of the measure.

In its release, DoD cited the aforementioned personnel strength cuts and the need for high- as well as low-ranking officers to share in the cuts. Defense also appealed to Congress by noting that the services are causing some senior officer reductions—thus reducing "grade creep"—by the "slowing of promotions" in the higher grades.

Colonel Andersen underscored this point for USAF by reminding that its "promotion phase points for temporary promotions have been slipping." For example, Air Force officers typically make lieutenant colonel and major at the sixteen- and eleven-year points of service, respectively. This is a year or so behind the time Army and Navy officers advance to the equivalent grades. All three services normally promote officers to O-6 at the twenty-one years' service point.

Under the first phase of the selection-out measure, the three services plan to convene boards late this year. These panels would tap certain Regular lieutenant colonels (and Navy commanders) who have failed twice or more for temporary or permanent promotion and colonels (and Navy captains) who have served at least four years in those grades.

"One probable answer is roars of outrage from the affected officers, via bitter protests to Hq. USAF, congressmen, and the media."

An officer would face an "out" board only once in each grade. Furthermore, at least seventy percent of those considered must be retained, according to the language of the proposal.

Air Force initially plans to pluck 520 officers for forced retirement, under the first round of the program. Departures might start as early as next January. A few of these people, of course, could elect to retire voluntarily, since all will have at least the required twenty years of service.

However, there is a $4,000 lump-sum transition bonus that Defense would give to officers going out promptly following enactment, because they "will be required to make a transition to civilian life with little prior notice" at a time when "their age limits opportunities for a second career."

Officers promoted to Regular O-5 and O-6 after enactment of the plan, and who are subsequently retired involuntarily, would not receive the bonus.

The all-service selection-out forecast for FY '75 is:

	O-6	O-5
Army	200	100
Navy	133	133
Air Force	200	320
Total	**533**	**553**

The Marine Corps has no plans to use the early-exit authority.

In the Air Force, a typical colonel departing under the plan would have about twenty-six to twenty-seven years' service, a typical lieutenant colonel twenty-three to twenty-four years, a Hq. USAF official said. Each service will establish its own consideration zones and board procedures, though the official said, "It's obvious that the people with the poorest records would be the ones to go."

If the project flys, tenure will be tampered with, and forced retirements will begin. What next? One probable answer is roars of outrage from the affected officers, via bitter protests to Hq. USAF, congressmen, and the media. Even lawsuits against Uncle Sam could develop.

Tenure Termination in the 1960s

All this occurred in the early 1960s under the legislation that, despite official efforts to give it a more dignified title, somehow became known as "White Charger."

Charger evolved from an all-service plan, conceived in 1958, to weed out senior Regular officers who, though alleged to be coasting, were immune from ouster. The old Cordiner pay committee shortly before that had censured the "sanctuary" arrangement Regulars enjoyed following promotion to permanent-Regular lieutenant colonel.

When Charger became law in 1960, Air Force had about 1,200 Regular lieutenant colonels who had been passed over up to eleven times for permanent eagles. It also had 600 permanent colonels who twice or more had failed for selection to permanent brigadier general. The sanctuary protected them all; then-Air Force Chief of Staff Gen. Curtis E. LeMay and other USAF leaders wanted to get some of them out.

Their answer — Charger — provided that authority for five years. The first blow was struck in early 1961 when the initial board's findings disclosed that 116 Regular colonels and 370 lieutenant colonels had been named for early retirement. This came to 486 officers pink-slipped out of 908 considered.

Suddenly, scores of the affected officers blasted the Air Force for its "sordid action" and "broken promises." But the orders stuck; the retirements took place on schedule, with no exit bonus to ease the sting.

Four more Charger rounds followed in succeeding years. But USAF, jarred by mounting protests and a series of lawsuits filed by Charger officers, gradually lost some of its enthusiasm for the program. In late 1964, the final board named only three officers for involuntary retirement. For all five annual boards, Air Force used Charger to retire a total of 201 permanent-Regular colonels and 588 permanent-Regular lieutenant colonels.

The several Charger officers who sued Air Force sought reinstatement and back pay. After protracted litigation and appeals in the courts, they all failed, yet their suits were plainly a thorn in USAF's side. The suits exposed weaknesses in the effectiveness report system and cast some doubts on the selection-out process then employed.

The case of Col. Clifford A. Dougherty provides an example. On the first Charger list, he sued the government on a variety of points, one declaring that his performance was anything but ineffective. He presented OERs that showed he had, in fact, been rated "an outstanding officer of great value . . . who should have been promoted in advance of other officers. . . ." It made no difference.

An interesting footnote to the Dougherty episode is that on leaving the Air Force he enrolled in the George Washington University Law School and subsequently graduated in the top ten percent of his class and with multiple honors. Colonel Dougherty is now a prominent Arlington, Va., attorney and alumni director of the George Washington University Law School.

The Navy, back in the late 1950s, had maneuvered its way clear of the other services on the original joint-service Charger-type legislation and secured its own "hump" bill. Purpose: to ease the logjam in its senior officer ranks and keep promotions flowing.

Navy not only got the special legislation, but it rammed through a $2,000 exit bonus for each early-retired officer, of which there were several hundred. The bonus, plus Navy's adept way of assuring the affected officers that they had good records, not substandard ones, salved wounds. Recriminations in the Navy—and in the Marine Corps, which also used the hump program—were few.

The author, Edmond N. "Ed" Gates, joined AIR FORCE Magazine as a Contributing Editor in 1973 upon his retirement as Editor of Air Force Times. *Since then, he has commented on many situations prevailing on the Air Force's personnel scene.*

The Air Force Outlook

Slightly more than a year after Charger expired in 1965, Air Force worked up a similar proposal and pushed it for several years without success. Gen. John P. McConnell, then USAF's Chief of Staff, was the force behind that effort. He believed, as have a succession of Air Force leaders, that the service needs on-hand authority to take periodic "quality" looks at senior people.

That feeling persists. Coupled with the overall manpower squeeze, the pressures for subjecting veteran Regulars to forced-exit screening mount.

DoD's game plan is to make the new selection-out package a permanent fixture, under DOPMA; when action is required, boards could be convened promptly. DOPMA stands for Defense Officer Personnel Management Act (H.R. 12405), a mammoth package of changes to officer personnel laws and rules.

But DOPMA is too much for Congress to digest this year, and maybe for next year and the year after. At any rate, DoD wants the "out" machinery so urgently that it extracted that item from DOPMA and sent it to Congress separately.

Whether it will be approved this year is uncertain, though an early hearing before a House Armed Services subcommittee is expected. Still, it's obvious that, as in the past, Congress has no great enthusiasm for the proposition.

But it may be overlooking the extreme lengths it and the Defense Department are taking to reduce officer strength and the need to spread forced reductions beyond one dwindling segment of the corps, the young non-Regulars. Air Force suffered a net loss of 11,000 officers in FY '72 and FY '73. This year, it's losing nearly 4,000 officer spaces and is scheduled to drop almost that many in FY '75.

The young non-Regulars, bearing the full brunt of the firings, not surprisingly are escalating their protests.

Some of these losses can be absorbed by reduced intake of new officers and additional voluntary early separations and retirements. But each year that the stiff cuts continue there is less left to squeeze.

As the RIFing of young non-Regular officers continues, the quality level remaining in that group increases significantly. At some point it could equal the quality level among young Regulars. That's about the case in the Army today, and it explains why that service is almost desperate for the unprecedented authority to oust perhaps 1,100 young Regulars, or about half of its next RIF of an expected 2,200 more officers overall.

And Air Force—not this year, but perhaps not too far off—may find itself in a similar plight. Congress, in granting Army special separation authority, might be wise to extend it to all services, just in case.

Firm tenure for Regular officers is highly desirable in normal circumstances. Certainly, real job security dissolves many pressures that rising executives in the business world constantly endure. Thus, with tenure, Regular officers become more productive and valuable.

Opponents of watering down tenure also note that Regulars were promised security for a full career. "It would be a serious breach of faith to suddenly change the rules," antitampering opinion asserts.

Unfortunately, circumstances on today's military manpower front are far from normal. From a total force of 3,500,000 members just six years ago, the combined services' personnel total is now down to 2,200,000 and dropping. The services, particularly on the officer side, cannot keep relying year after year on reduced new officer procurement, early releases, and early retirements to accommodate the bulk of the cuts. The time will eventually come when that cupboard will become bare.

And tampering with tenure may well become necessary. ■

NATURE BOY

While standing in the chow line at an airfield near Naples early in April 1944, I was directly behind two sergeants. From their conversation, you didn't have to be Sherlock Holmes to deduce that one of them was a Texan. At this moment, Mount Vesuvius in the background emitted a long, thundering roar, and smoking debris spewed over the top of the now-flaming volcano. It was a most impressive sight, and one of the sergeants spoke up excitedly: "Hey, Longhorn, you ain't got nuthin' like that in Texas!" The other stared at the spectacular scene for a long moment and then turned around. "You're right," he retorted laconically, "and we don't NEED it, either!"

—Contributed by Col. Fred E. Bamberger, Jr., USAFR (Ret.)

(AIR FORCE *Magazine will pay $10 for each anecdote accepted for publication.)*

Last Call!

Plans for the 1974 Air Force Association Aerospace Development Briefings and Displays scheduled for September 17, 18, and 19 at the Sheraton-Park Hotel, Washington, D.C., are moving fast. Nearly 90% of the exhibit space has already been assigned.

The Briefings and Displays offer a unique combination: the physical presentation of aerospace/defense equipment . . . and . . . informative company briefings, in the booths, to key military, government, and industry personnel.

Morning attendees are assembled into parties of 20 persons each and are escorted from briefing to briefing on schedule. Afternoon attendees may select any presentation offered in any order of preference.

Last year, 5,502 persons participated in the Briefings and Displays, including 153 General Officers and Admirals and 726 Colonels and Navy Captains. The Secretary and Chief of Staff of the Air Force were honored at a reception in the Exhibit Hall, attended by some 2,000 guests.

If you would like more details on AFA's 1974 Aerospace Development Briefings and Displays call us today. Better act now, as almost all the available space has been assigned.

To reserve Briefing and Display space write or call:

Charles E. Cruze
Air Force Association
1750 Pennsylvania Ave., N.W.
Washington, D.C. 20006
(202) 298-9123

National Air Force Salute

METROLINER WEEKEND

BECAUSE of the energy crisis, some 270 top congressional, Department of Defense, White House, and other government dignitaries traveled from Washington, D. C., to New York City on Friday, March 22, via Amtrak's famed Metroliner, courtesy of AFA's Iron Gate Chapter, to attend the Chapter's Eleventh National Air Force Salute. Among those making the rail trip were Air Force Secretary John L. McLucas and Mrs. McLucas and Air Force Chief of Staff Gen. George S. Brown and Mrs. Brown. Sens. Barry M. Goldwater and Howard W. Cannon headed an imposing congressional delegation aboard the high-speed train.

More than 900 military, civilian, and aerospace leaders attended this annual black-tie, fund-raising event at the New York Hilton. Other dignitaries included AFA's National President, Chairman of the Board, and National Secretary. Also present with their ladies were the Commander in Chief of SAC and the Commanders of AFLC, MAC, AFSC, TAC, ATC, and the Air University. Present, too, were Assistant Secretaries of Defense and of the Air Force, key military and civilians from the Air Staff, and a number of radio and television personalities.

The Salute paid special tribute this year to "The Air Force Family"—that unique meld of professionals—civilian and military, men and women, officers and airmen, Guard, Reserve, and cadets. Those attending joined AFA in its pledge of support for the men and women of the Air Force.

The Chapter's top award, formerly known as the Bronze Eagle Trophy but renamed the Maxwell A. Kriendler Memorial Award in honor of the late Mac Kriendler, founder of the Chapter and innovator of the Salutes, went this year to Sen. Barry M. Goldwater of Arizona.

Entertainment was provided by Ireland's Clancy Brothers, and guests danced until 1:00 a.m. to the music of the Air Force's Airmen of Note and the Meyer Davis Orchestra.

Most of the out-of-town guests elected to remain in the city and attend a United Nations Sunday Brunch hosted by National Salute General Chairman J. William Bailey, President of Overseas National Airways.

The Twelfth National Air Force Salute is scheduled for New York City on March 21, 1975. ■

—BY JOHN O. GRAY

Briefcase in hand, Air Force Secretary John L. McLucas prepares to board the Metroliner to New York.

Sen. Barry M. Goldwater escorts the congressional delegation aboard the New York-bound Metroliner.

Mrs. Doris Reminger, a member of the FAA Woman's Advisory Committee on Aviation, discusses the "railroad trip" with Air Force Chief of Staff Gen. George S. Brown and Mr. and Mrs. Herb Fisher.

From left, AFA Board Chairman Martin M. Ostrow; Salute Chairman Bill Bailey; Air Force Secretary John L. McLucas; Iron Gate Chapter President Herb Fisher; and AFA National President Joe L. Shosid.

From left, Pete Kriendler; Sen. and Mrs. Barry M. Goldwater; the Hon. J. Raymond Bell, Chairman, Foreign Claims Settlement Commission of US and National Salute Chairman for '71, '72, and '73; Col. I. Robert Kriendler; and Mrs. Jeanne Viner. Colonel Kriendler presented the Chapter's Maxwell A. Kriendler Memorial Award to Senator Goldwater.

The Bulletin Board

By John O. Gray
MILITARY AFFAIRS EDITOR, AIR FORCE MAGAZINE

Military Health Care

By the time this reaches AIR FORCE Magazine readers, S. 2770, "Medical/Health Professional Bonuses," will have become law. Passed by the Senate in December 1973, the bill was amended in the House to include veterinarians, optometrists, and dentists. The House also increased the Senate version's maximum bonus from $10,000 to $15,000.

In April 1974, a conference committee reported out an amended version, adopted by Senate and House, that would provide bonuses up to a maximum of $13,500 exclusively to military physicians and Public Health Service medical officers, provided they are not serving an initial active-duty obligation of four years or less or undergoing intern or initial residency training. Monthly professional pay is to rise to $350 after two years of service, instead of after ten, as it is now.

It should be noted, however, that the bonuses are not mandatory. It will be up to OMB, OSD, and the services to determine the recipients and the size of the bonuses.

The legislation had been long requested by DoD and long supported by AFA. It will surely encourage a number of military physicians to remain with their respective services. Despite this, however, and by the end of June 1974, USAF will still be short some 460 doctors of its authorized strength of 3,768. It is projected that by the end of FY '75 it will be short 634 from its FY '75 quota of 3,672. Especially lacking will be family practitioners, obstetricians, pediatricians, and flight surgeons.

The Air Force still obtains a number of physicians through the Berry Plan and reports that some 590 physicians scheduled to enter the Air Force are now undergoing internships or residency training. Input from the Berry Plan, however, will end after FY '77. To assist in recruiting physicians, the Air Force has a highly commendable policy of permitting the direct commissioning of qualified physicians up to age fifty-eight. They would be called to active duty, voluntarily, under a specified contract period, with rank being determined by specialty, years of practice, etc.

Special Pay

S. 2771, "Enlistment and Reenlistment Bonuses and Officer Critical Skill Bonuses," was adopted by the House and Senate in late April. It is expected to become law by the time this reaches our readers. The legislation allows bonuses of up to $3,000 for enlistments of at least four years in any critical area. A "selective reenlistment bonus" of up to $15,000 in critical skill areas is provided, with the maximum amount limited to the nuclear power field. A Senate provision authorizing women to attend the service academies was dropped. The Congress believes it is a matter for separate legislation.

Officer Tenure and Separation

As of this writing, no hearings have been held on H.R. 11113 to amend Title 10, US Code, which would authorize the selective continuation of certain Regular commissioned officers on active duty. The legislation would permit screening those who have at least twice failed selection for promotion to the temporary or permanent grade of lieutenant colonel and those who have served more than four years in the temporary or permanent grade of colonel *(see also p. 70)*.

Under the bill, up to thirty per cent of passed-over lieutenant colonels and colonels could be forced to retire no later than seven months after the Service Secretary approved the selection board report. Officers not eligible for retirement would be kept on active duty until qualified and then retired.

Officers forced out would get a lump-sum transition payment of $4,000 unless promoted after the date of enactment and then involuntarily retired. Officers would be considered only one time by the screening board. Some 390 Air Force Regular lieutenant colonels and colonels would be affected by the legislation. Hearings are expected in the not-too-distant future.

Retirement Modernization

H.R. 12505, covering proposed legislation submitted to the Congress more than a year ago, pertaining to a new Non-Disability Re-

Celebrating in Colorado Springs the fiftieth anniversary of the RCAF were, from left, Lt. Gen. R. J. Lane, Dep. CINC, NORAD; retired Air Marshal C. R. Slemon, a member of the original RCAF; Pipe Sgt. J. Thompson, Canadian Forces Base Trenton Pipe Band; and Gen. Lucius D. Clay, Jr., CINC, NORAD.

irement System, has resulted in no hearings—with none in sight. Congressional leaders are aware of the cool reception the proposed and controversial new retirement program has received from service personnel.

Tax Treatment of Moving Expenses

In 1969, harsher tax treatment of service-connected moving expenses was enacted, but, since then, DoD has been given an IRS moratorium on the new rules. Last December, a further and "final" moratorium, according to IRS, was granted through the end of the current session of Congress. DoD has proposed a change in the law to provide a permanent solution to the problem. While no congressional action has been taken on the proposal, the Senate Finance Committee has amended a House-passed bill dealing with combat-zone tax relief (H.R. 8214) to extend the moratorium through December 31 of this year. However, the Senate did not act on the amendment or H.R. 8214 prior to adjourning the first session last December. It was resubmitted to the Senate Finance Committee in January 1974, and a report is expected momentarily.

Command of Flying Units

A legislative proposal, approved by USAF in March 1974, to repeal Section 8577 of Title 10, US Code, which restricts command of Air Force flying units to officers with a pilot rating, is also awaiting final OMB approval. Presumably, the bill would permit navigators to command flying units.

Servicemen's Group Life Insurance

The House-passed bill would provide $15,000 Servicemen's Group Life Insurance to members of Reserve components. The Senate raised the amount to $20,000. Delay in final agreement was due to administrative problems with respect to allotments. This has apparently been resolved, and the $20,000 version is expected to gain full approval.

Pay and Allowances

H.R. 10370 would allocate pay raises among basic pay and the housing and subsistence allowances instead of increasing base pay alone. Despite considerable congressional interest, no hearings have been held since the bill was introduced in mid-September 1973. While such legislation could well increase take-home pay because of the nontaxable increase in allowances, it also would decrease future retirement pay, computed on base pay alone.

Recently honored at the annual banquet for the AF Academy's Outstanding Airmen of the Year (1973) were, from left, SSgt. Cornelius W. Connery, First Term Reenlistee of the Year; Sgt. Debra A. Peavornick, Airman of the Year; Sgt. Chris N. Wiger, NCO of the Year; and MSgt. Starling D. Hardee, Senior NCO of the Year.

Personnel Management Act

H.R. 12405, the Defense Officer Personnel Management Act (DOPMA), would provide DoD-wide statutory grade limitations, an all-Regular officer force from the eleventh year of service on, a single promotion system and uniform promotion phase points, and senior-officer forced retirement authority. The legislation was introduced in January 1974. No hearings, as of this writing, have been scheduled. Passage this year is doubtful.

Extension of OGLA

This Air Force legislative proposal to extend its temporary field-grade authority for two years from the present expiration date of the Officer Grade Limitation Act (OGLA) of September 30, 1974, has also been approved by the Army, Navy, and OSD, and, at this writing, is awaiting final OMB approval. USAF is seeking this legislation in the event that DOPMA *(see above)* is not enacted prior to September 30.

Garnishment of Federal Pay

A Senate amendment to H.R. 3153 (Social Security Act Amendments) provides for garnishment of wages of federal employees, including military personnel, in support of alimony cases. Although the Congress adopted legislation last December increasing Social Security benefits, H.R. 3153 is still in conference. No immediate action is anticipated on this controversial bill.

Space-Available Transportation

H.R. 10966, introduced last October, would require all officers in the grade of major or lieutenant commander and above to pay 100 percent of the cost of military space-available travel. Captains and Navy lieutenants would pay seventy-five percent, and lieutenants and lieutenants junior grade and below would pay sixty percent. Warrant officers and enlisted personnel would pay fifty percent. DoD is opposed to the legislation. No immediate action is expected.

Time to Select a Home

H.R. 5223 would extend from one to three years the period a retiree has to select a home, for assessing travel and transportation allowances. The government would participate as the member's agent for the storage of household goods beyond one year, with the member paying storage costs in excess of one year. DoD is in favor of the legislation, but immediate action is not expected.

Reduction in Force

Fiscal Year 1975 promises to be another severe reduction year for officers. The President's budget calls for a reduction of 3,659 officers and 11,416 airmen.

"Current officer loss projections indicate that by utilizing the full

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array of voluntary and limited involuntary loss management programs used in Fiscal Year 1974, we can achieve about 1,500 losses. The approximately 2,200 remaining reductions will require RIF action," said USAF's Director of Personnel Plans, Maj. Gen. Kenneth L. Tallman, before Subcommittee No. 2 of the House Armed Services Committee.

General Tallman also said that "the current reduction picture for airmen is not as grim. The 11,416 [FY '75] enlisted cut can be resolved by limited procurement adjustments and induced voluntary losses."

The Air Force has been reluctant to use RIF action, General Tallman said, "primarily because it is costly; most members involved are by law entitled to severance pay ranging from $10,200 to $15,000 based upon their active service. We are also concerned with the breach-of-faith issue that always comes up and the frequent hardship associated with abrupt, forced termination of the careers of people who have served well and faithfully."

General Tallman also advised that voluntary separations are declining, particularly with the advent of the all-volunteer force, since those who enter the service are more career-motivated. Also, the Air Force wants to assure that its inventory of highly critical and costly skills is preserved and is reluctant to grant voluntary separations in these areas.

Two Men Per Room

Although the military construction bill passed by Congress last fall authorized the Air Force to continue with its two-men-per-room policy, it also requested that DoD study this matter, especially since other services, particularly the Marine Corps, have more than two men per room. DoD has now accepted Air Force policy, stating that "the estimated indicated savings in construction costs could easily be offset by a reduction in retention rates due to lower morale and by overcrowding or underutilization of barracks in assigning quarters." Unfortunately, it appears that some congressmen are still not convinced.

Guard and Reserve Recruiting

Secretary of Defense James R. Schlesinger has recently approved offering nonprior-service enlistees in the National Guard and Reserv options of three or four years' par ticipation in the Selected (Ready) Reserve with the balance of military service obligation to be performed in the Individual Ready Reserve. Use of these options will be limited to applicants in Mental Categories I, II, and III, and to not more than twenty percent to meet its most critical personnel needs. This authority has long been sought by ANG and Air Reserve leaders. At the same time, the Defense Secretary reaffirmed deferral of action on reenlistment bonuses for the Guard and Reserve until "such time as there is a demonstrable need for such action."

Air Force Reservist TSgt. Lester D. Fulford was recently named as ADC's Outstanding Reserve Augmentee for 1973. At a ceremony in Colorado Springs, he and his wife, Lou Ann, receive a plaque from Maj. Gen. Frank Spink, a Reservist assigned as Assistant to the CINC, NORAD. A fire protection technician, Sergeant Fulford is a civilian fireman with thirteen years' service.

Reduction of ANG Flying Units

Congress is seriously challenging DoD's decision to eliminate fourteen ANG units (*see AFA Resolution, April '74* AIR FORCE *Magazine*). Congressional leaders believe that these units should be assigned new roles and missions, rather than be disbanded. Pentagon officials are studying the issue. Under consideration for assignment to the Air Guard, it was learned, are additional C-130s, lightweight fighters, and additional A-7s.

Severance Pay for Regulars

In April, Sen. Vance Hartke (D-Ind.) introduced S. 3330 to amend Title 10, US Code, to provide severance pay for Regular enlisted members of the armed services with five but less than twenty years o continuous active service who are involuntarily released from active duty. The pay would be computed by multiplying the enlisted member's years of active service by one-half of one month's basic pay of the grade in which the member is discharged. Total payment shall not exceed $10,000 for any individual member. The bill was referred to the Senate Armed Services Committee.

Flight Pay

The new flight pay bill (H.R. 12670), which passed the House with a resounding majority in February 1974, had its hearing before a Senate Armed Services Subcommittee, chaired by Sen. Harry F. Byrd, Jr. (D-Va.), on April 23. From all reports, the hearing was most favorable, with Sen. Barry M. Gold-

/ater (R-Ariz.) testifying: "I think I ım well qualified to tell you that, in ny opinion, it is a good bill, and I ırge you not to make *any changes* n it and to recommend its approval by the full committee." The bill, in-:act except for minor technical clar-fications, is given a good chance for early Senate adoption.

AFRES Military Associate Program

In a recent appearance before the House Armed Services Committee, Assistant Secretary of Defense (Manpower and Reserve Affairs) William K. Brehm announced an alternative crew-ratio composition for military airlift. A total of 8,600 additional military and civilian manpower spaces had been asked for in the Air Force's FY '75 "Readiness Supplemental." This would have raised the active-force crew ratio from 2.0 to 2.75.

In responding to a previous query from the Senate as to why the Air Force Reserve could not assume some of this additional effort, Secretary Brehm advised that DoD was now planning that the Air Force Reserve would assume an increased crew ratio of 1.25 in the C-5 program and 1.50 in the C-141 program—up from 1.0 and 1.25 respectively.

This would require additional manning in the Air Force Reserve Military Airlift Associate program of some 4,000 military and civilians. The active force, then, would have a crew ratio of 2.5 in the C-141 program, up from 2.0; and 2.75 in the C-5 program, up from 2.0. The

Ed Gates . . . Speaking of People

Competition Set for Junior Officer Promotions

For years, officers new to the military service have received two virtually automatic promotions. And it has taken them just three years to advance from second lieutenant to captain.

But the practice, which has drawn its fair share of knocks, is nearing an end. The rules are undergoing alterations that appear beneficial to the service, though a few individuals inevitably will take some lumps.

Until recently, most Air Force line lieutenants pinned on their captains' bars on completion of three years' commissioned service. Exceptions occurred when local commanders—generally in disciplinary cases—withheld or delayed promotions, but in such cases only two percent of the officers eligible for advancement were involved. And, frequently, the hikes were approved later, so that about ninety-nine percent of all Air Force first lieutenants in recent years have received the nod for O-3.

These promotions, in effect, were automatic and totally without benefit of selection-board action. All eligibles had to do was put in their time and stay out of trouble, hardly criteria of distinction. Then, in 1972, as personnel strength continued to plunge, Air Force Headquarters announced a stretch-out of the three-years-to-make-captain program to an eventual four years. This is being phased in on an incremental basis. Currently, the advancement point to captain is three years and eight months; by January, it will be a full four years for all.

Also by that time, a more significant change will have been invoked: Automatic advancements will give way to a formal board system. The first such board, to convene early this fall, will examine the records of about 4,100 first lieutenants slated to complete their four years of service during the first half of calendar 1975.

Approximately ninety-five percent are expected to win board approval for promotion. The five-percent rejection rate for O-3 hopefuls, which seems entirely reasonable, provides a long overdue measure of selectivity.

There will not be any below-the-zone selections, officials explained, since the officers' files will contain too few OERs to permit reasonable judging.

A built-in passover rate of five percent indicates that about 200 of the contenders before the board won't make it. This compares with about fifty, who conceivably would fail if the old system were retained.

The difference may not evoke great consternation among contenders, nor should it. Nevertheless, the increase appears sufficient to cause numerous young officers who may be relaxing too much to reevaluate themselves and their records and pour on more coal. Though the numerical increase in the number of passovers projected Is modest, the cumulative impact of many hundreds of young officers putting out with that extra something can only improve the overall quality of the force.

USAF officials at press time had not decided whether one passover to O-3 will trigger separation, or whether a dual deferral plan will be used. They said they prefer "one failure and out." However, since H.R. 12405, the proposed Defense Officer Personnel Management Act (DOPMA—formerly DOPMS) would establish a double passover rule for first lieutenants, two deferrals may be required, they said.

On the other hand, some sources give the complex DOPMA package little chance of becoming law. Readers may recall that it is DOPMA that contains the permanent officer-grade tables the Air Force so desperately needs by September 30 when the present temporary grade ceilings expire. Without an extension, all Air Force officer promotions will be in deep trouble *(see "Reforming the Officer Promotion System," June '73 issue).*

Suppose the new O-3 program works out as indicated, with up to fifty of every 1,000 contenders for captain being eased out of uniform. Over a period of several years, this would suggest a not inconsiderable purging of officers who, under the old system, may have hung on until the competition for temporary major busted them out. It would appear that by being tougher with O-3 candidates, picks for O-4 down the road would ease slightly. Might Air Force, therefore, decide to improve the to-major selection opportunity, now pegged at eighty percent, by a small percentage?

Definitely not, a Hq. USAF authority said. The forecast is "for tougher competition down the path for O-4," he declared.

In any event, the changes to the O-3 promotion program are well advised. Some individuals whose records under the new system may place their selection in doubt are not going to stand up and cheer. But, according to USAF officials, the bulk of the first lieutenants on board welcome the new system. ■

The Bulletin Board

"Total Force" would have an overall crew ratio of 4.0.

Asst. SecDef for Reserve Affairs

Recent congressional hearings have revealed an interest by some congressional leaders in upgrading the current position of Deputy Assistant Secretary of Defense for Reserve Affairs to Assistant Secretary. With some 800,000 Guardsmen and Reservists, and a multi-billion-dollar Reserve Forces budget, these congressional leaders believe that such an upgrading is not only wise but necessary.

Senior Staff Changes

PROMOTIONS: To be **Brigadier General:** John T. **Guice.**

RETIREMENTS: B/G Conrad S. **Allman;** M/G William E. **Bryan,** Jr.; M/G William W. **Berg;** B/G William H. **Fairbrother;** B/G William C. **Fullilove;** B/G Brian S. **Gunderson;** B/G E. Ann **Hoefly;** B/G Harold A. **Strack;** M/G Roy M. **Terry;** B/G Geoffrey P. **Wiedeman.**

CHANGES: B/G (M/G selectee) Timothy I. Ahern, from Asst. DCS/Programs & Requirements, J-5, NORAD/CONAD, and DCS/Programs & Requirements, Hq. ADC, to DCS/Plans and Programs, J-5, NORAD/CONAD, and DCS/Plans and Programs, Hq. ADC, Ent AFB, Colo., replacing M/G James E. Paschall . . . **B/G John G. Albert,** from Dep., Space Defense Systems, SAMSO, AFSC, Los Angeles, Calif., to Cmdt., Defense Systems Management School, Ft. Belvoir, Va. . . . **B/G Benjamin R. Baker,** from Surgeon, USAFE, Ramstein AB, Germany, to Dir., Medical Plans and Resources, OTSG, Washington, D. C., replacing M/G John H. Wilkins . . . **B/G (M/G selectee) Bennie L. Davis,** from Dep. Asst. DCS/P for Military Personnel, and Dep. Cmdr., AFMPC, to Cmdr., USAF Recruiting Service, Hq. ATC, Randolph AFB, Tex., replacing retiring B/G Conrad S. Allman.

Col. (B/G selectee) Garth B. Dettinger, from Surgeon, AFMPC, to Cmd. Surgeon, Hq. ATC, Randolph AFB, Tex., replacing retiring B/G Geoffrey P. Wiedeman . . . **B/G Walter D. Druen, Jr.,** from Chief, Air Security, MAAG, Teheran, Iran, to Dep. Asst. DCS/P for Military Personnel, and Dep. Cmdr., AFMPC, Randolph AFB, Tex., replacing B/G (M/G selectee) Bennie L. Davis . . . **Col. (B/G selectee) Howard M. Estes, Jr.,** from Dep., Reentry Systems, to Dep., Space Defense Systems, SAMSO, AFSC, Los Angeles, Calif., replacing B/G John G. Albert . . . **M/G Robert N. Ginsburgh,** from Dir., Office of Information, SAFOI, Hq. USAF, to Dep. Dir., Jt. Staff, OJCS . . . **B/G (M/G selectee) Abbott C. Greenleaf,** from Dep. Dir., Programs, to Dir., Programs, DCS/P&R, Hq. USAF, replacing M/G James A. Hill . . . **Col. (B/G selectee) Thomas M. Groome, Jr.,** from Cmd. Chaplain, USAFE, Ramstein AB, Germany, to Dep. Chief, Chaplains, USAF, Washington, D. C., replacing B/G (M/G selectee) Henry J. Meade.

Col. (B/G selectee) John T. Guice, from Exec. Officer, to Dep. Dir., ANG, National Guard Bureau, Washington, D. C., replacing M/G John J. Pesch . . . **B/G (M/G selectee) Guy E. Hairston, Jr.,** from Dep. Dir., to Dir., Office of Information, SAFOI, Hq. USAF, replacing M/G Robert N. Ginsburgh . . . **M/G James A. Hill,** from Dir., Programs, DCS/P&R, to Asst. DCS/P&R, Hq. USAF, replacing retiring M/G William W. Berg . . . **B/G (M/G selectee) Larry M. Killpack,** from Dir., Accounting & Finance, and Cmdr., AFAFC, Denver, Colo., to V/C, 12th AF, TAC, Bergstrom AFB, Tex., replacing B/G Walter P. Paluch, Jr. . . . **B/G (M/G selectee) Henry J. Meade,** from Dep. Chief, to Chief, Chaplains, USAF, Washington, D. C., replacing retiring M/G Roy M. Terry . . . **M/G Otis C. Moore,** from Cmdr., 14th Aerospace Force, Hq. ADC, Ent AFB, Colo., to Dir., Ops, DCS/P&O, Hq. USAF, replacing M/G Cuthbert A. Pattillo.

B/G Walter P. Paluch, Jr., from V/C, 12th AF, TAC, Bergstrom AFB, Tex., to Cmdr., 314th Air Div., PACAF, Osan AB, Korea, replacing B/G Winfield W. Scott, Jr. . . . **M/G James E. Paschall,** from DCS/Plans & Programs, J-5, NORAD/CONAD, and DCS/Plans & Programs, Hq. ADC, to Cmdr., 14th Aerospace Force, Hq. ADC, Ent AFB, Colo., replacing M/G Otis C. Moore . . . **M/G Cuthbert A. Pattillo,** from Dir., Ops, DCS/P&O, Hq. USAF, to DCS/Ops and Intelligence, Allied Forces Central Europe, Brunssum, Netherlands, replacing retiring M/G William E. Bryan, Jr. . . . **B/G John S. Pustay,** from Exec. Asst. to SAF, to Dep. ACS/Intelligence, Hq. USAF . . . **B/G Clifford Schoeffler,** from Chief, Strategic Ops Div., J-3, Jt. Staff, OJCS, to Dir., Ops & Tng., DCS/Ops, Hq. SAC, Offutt AFB, Neb.

B/G Winfield W. Scott, Jr., from Cmdr., 314th Air Div., PACAF, Osan AB, Korea, to V/C, Sacramento Air Logistics Center, AFLC, McClellan AFB, Calif., replacing retiring B/G William C. Fullilove . . . **B/G Lucius Theus,** from Special Asst. to Dir., Personnel Plans for Social Actions, DCS/P, Hq. USAF, to Dir., Accounting & Finance, and Cmdr., AFAFC, Denver, Colo., replacing B/G (M/G selectee) Larry M. Killpack . . . **Col. (B/G selectee) Howard R. Unger,** from Cmdr., USAF Hospital Lakenheath, RAF Lakenheath, England, to Surgeon, USAFE, Ramstein AB, Germany, replacing B/G Benjamin R. Baker . . . **M/G John H. Wilkins,** from Dir., Medical Plans and Resources, OTSG, Washington, D. C., to Dir., Medical Inspection, AFISC, Norton AFB, Calif. . . . **B/G Charles E. Word,** from Cmdr., 81st TFW, USAFE, RAF Bentwaters, England, to Dep. Dir., J-3 (NMCC), Jt. Staff, OJCS.

—Compiled by Catherine L. Bratz

Capt. Jon S. Wheeler has received the Kuhfeld Award as top Air Force lawyer for 1973. He is Judge Advocate General at TAC's Hurlburt Field, Fla., where he was youngest USAF JAG when assigned in March '72.

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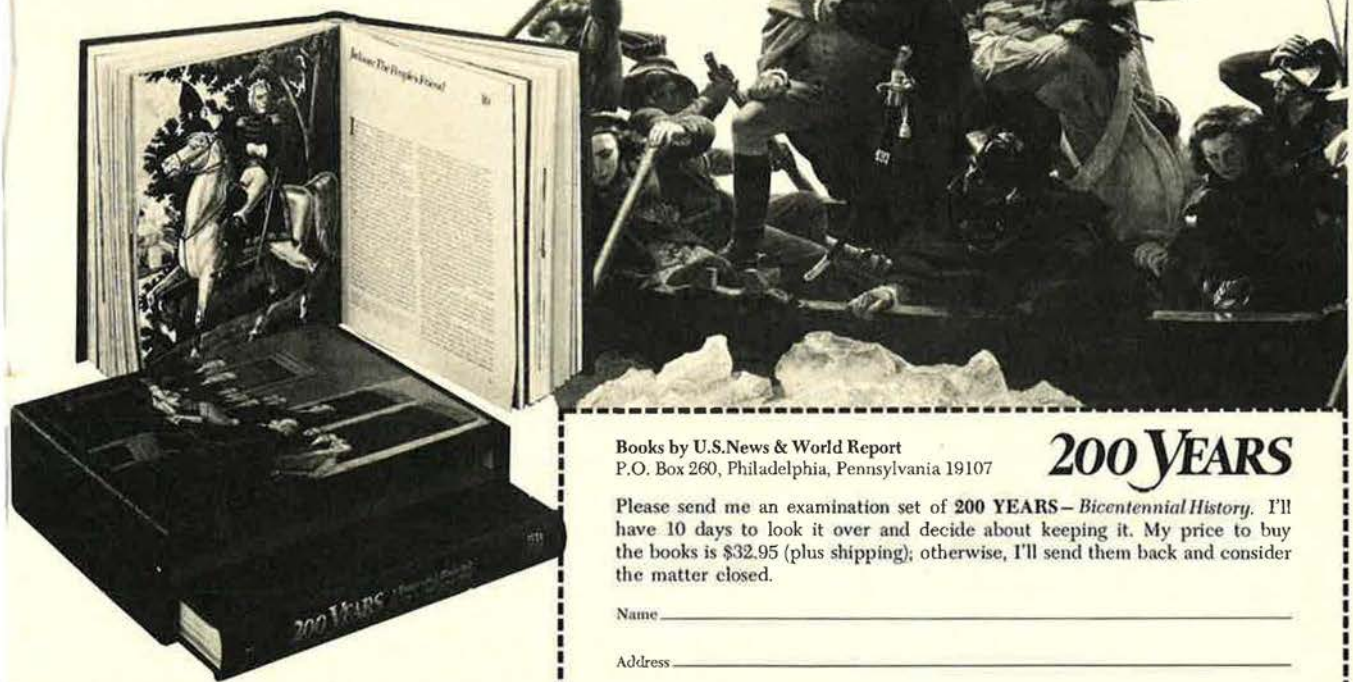

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Airman's Bookshelf

James Jones in Vietnam

Viet Journal, by James Jones. Delacorte Press, New York, N. Y., 1974. 257 pages. $7.95.

There is more of James Jones in this journal than Viet. This is his first nonfiction, and the publisher says it's "truly new journalism." I'll take the old journalism. I'd like more of Vietnam after the cease-fire; more of what Gen. Fred Weyand, MACV Commander and Jones's old buddy from Paris, said about the US pulling out of the war, what South Vietnam would do without US airpower and troops; more about the Thieu government's suffocating bureaucracy and its preoccupation with red tape and propaganda. I'd like more of the feel of the massive US war machine slinking away in a sad little farewell ceremony at MACV with some canned martial music and an amplifier system that croaked those last few brave words of General Weyand—who had hidden from the press for months.

Instead, we get Jones's bouts with his fears of death. He is haunted by a chittering hairy little ape that torments him before he flies to the Ranger camp at Dak Pek or the base at Tri Ton where the Viet Cong are firing mortars. Jones, at fifty-two, was half eager, half afraid to taste the war correspondent's excitement of battle's dangers after the war had officially ended in a fragile cease-fire. What was a routine noncombat tour as a VIP sponsored by General Weyand became magnified by Jones's obsession into a daring penetration of enemy territory fraught with mortal danger.

"Dak Pek was in the way of becoming an obsession with me," he writes. All through the journal is his premonition of death that does not come. He recalls his wife's reminder that Bob Capa, the photographer, and Bernard Fall, the historian, had died in Vietnam. Jones asks why he should get himself killed when he isn't a war correspondent or even a journalist?

Jones reverts often to his hairy little pal—the image of his fears—and confesses candidly that he was afraid before he visited Dak Pek and Tri Ton. He was ashamed, but he finds "that fear oddly seductive."

"It was a strange thing, fear," he writes. "It wasn't always so unpleasant. It could be as exciting as sex. And in the same way. If all the factors were right, fear could be terribly exciting. So exciting you could be hooked on it like a drug. And want to do it again. Like sex."

Jones also suffers fits of depression. He's had them ever since he was a boy. He calls them "guilt-panic." The symptoms are similar to fear, he says, "but different in the way they tasted."

Jones reveals himself on French toilets in Vietnam (they're of cast iron, heavy, and turgid), on the heavy white thighs of the fat American women in Saigon; on his secret ambition to become a career soldier; his poker-playing prowess; his boredom with being an instant journalist; his annoyance with the aloofness of the New York *Times* bureaus in Paris and Saigon; and his tribulations in getting a visa from the frustrating Saigon bureaucracy.

Admittedly Jones is not a journalist and, therefore, cannot be expected to get first names and initials or explain how he flew in a "C-147" that does not seem to exist. But, as a sensitive, earthy novelist, how could he make the mistake of saying that it is hard to detect a good figure in an *ao dai,* the tight-fitting, flowing dress and pants Vietnamese women wear with such revealing impact?

Jones's best reporting emerges from a visit with George Jacobson, the State Department official who helped defend the US Embassy in Saigon in the 1968 Viet Cong Tet offensive. Jacobson was the head of CORDS (Civil Operations and Rural Development Support) office when Jones visited. Jones writes that Jacobson is probably the last surviving believer in the domino theory. Jacobson tells Jones that "there were too damned many reporters already" in Saigon and "none of them was willing to risk his neck to write an unbiased view." All they were interested in was scandal and finding some way to make the US look bad again. Jacobson gloomily estimates that the North Viets now have about half of South Vietnam—what they were beginning to call the Third Vietnam—most of Laos, and more than half of Cambodia. And Thailand, Burma, and India would be next.

Jacobson felt South Vietnam, however, could hold out indefinitely if the US continued to help. Jacobson told Jones he did not intend to go home and never expected to leave Vietnam. However, Jones was glad to leave Vietnam with its filth and human suffering and fat American white thighs. He made a nostalgic visit to Hawaii to find the twenty-year-old James Jones in the "gook shirt"—the youthful memories of his days as a soldier at Schofield Barracks that he wrote about in *From Here to Eternity.*

He is most poignant when he gets away from Viet—he never writes of Vietnam—and revisits the youthful Jones. Those passages from Jones's journal are worth reading.

—*Reviewed by Lloyd Norman, Pentagon correspondent for* Newsweek *and former* Newsweek *Bureau Chief in Saigon.*

Hyperbolic Warning

Soviet Conquest from Space, by Peter N. James. Arlington House. New Rochelle, N. Y., 1974. 256 pages. $8.95.

It is difficult to take this book's scare title seriously after surveying the space headlines of the last few years. While US astronauts explore the moon and spend months in giant space stations, and American robot explorers probe Venus, Mercury, Jupiter, and Saturn, the Russians have been plagued with cosmonaut funerals, exploding

ockets and satellites, and crashing lars probes.

Yet author Peter James warns hat the Soviets have been stressing he development of military space apabilities, from new ICBMs to nanned reconnaissance space sta- ions. While the scope and size of he Soviet space effort continues to ncrease (more than forty photo- econnaissance satellites were aunched in 1973), the US space rogram faces a five-year pause in advanced manned spaceflights and a ten-year-low record in the number of satellite launchings.

The author has the correct credentials to write about the Soviets' military space effort. He was an aerospace engineer with Pratt & Whitney, as well as a participant at numerous international astronautical congresses and the author of numerous classified studies for the US military intelligence services.

These qualifications are apparent in the well-organized and well-written sections of the book that describe the Soviet military-industrial complex and the Russian intelligence organizations. Later, more technical chapters describe and summarize such various Soviet aerospace systems as their ICBM inventory, their space boosters, their manned spacecraft, and such vari- ous space weapon systems as orbi- al nuclear bombs and satellite nterceptors.

But in addition to his qualifica- ions, Mr. James carries the burden f a serious thesis: In the face of uture Soviet rocket boosters, 'Rocketplane" space shuttles, and similar systems, America faces a grave challenge and the impending possibility of a space Pearl Harbor by 1980.

No serious observer can doubt that the Soviet aerospace threat is frighteningly real. But recent revelations of the backward (not, as James claims, ten years ahead of Apollo) designs of the Soviet manned spacecraft, and continued US determination to establish an advanced space transportation system based on our own Space Shuttle, indicates that things are not as black as he suggests.

James's book is an interesting, straightforward, and purposefully alarming description of Soviet aerospace military capabilities. In its attempt to overstate its case and add urgency to its message, the book unfortunately strains the credibility of readers familiar with the subject matter from other sources. But the message, and most of the material, remains valuable.

—Reviewed by Capt. James E. Oberg, USAF, DoD Computer Institute.

Policy, Society, and Revolution

Armies in Revolution, by John Ellis, Oxford University Press, New York, N. Y., 1974. 278 pages with index. $10.95.

In the words of the author, who has taught military subjects in England, "this is a study of revolutionary war." In textbook fashion, two problems are considered, common to the seven examples set forth: How military policy affected the development of a particular revolution, and how the social roots of that revolution affected methods of war and military organization.

In order, Ellis discusses the English Civil War of the seventeenth century, in which Charles lost his head; our own War of Independence; the French Revolution; the Prussian Army Reforms of 1806–15; the Franco-Prussian War and the Paris Commune of 1870–71; the Russian Revolution of 1917–20; and the Chinese struggle, 1916–49. A chronology is supplied in each instance.

Respecting the American Revolution, the author seems puzzled that there should have been such disparate motivations as propelled the thirteen colonies into their declarations of independence, and such disparate responses as they made to the need for supplying armed forces to sustain the decisions in freedom's cause.

One conclusion to be drawn—though Ellis himself fails to make it—is that revolutions seldom fit into a neat pattern of performance recorded earlier and elsewhere. Rather, just as with so much of the rest of the human condition, revolutions ebb and flow according to onrushing tides in the affairs of men.

—Reviewed by Walter T. Bonney, former Director of Information, NASA.

New Books in Brief

Bloody Buna, by Lida Mayo. Well-researched and engagingly written, *Bloody Buna* is a book for all with an interest in the fascinating history of the Allies' first major land victory in the Pacific. The author was the Senior Military Historian in the US Army's Office of Military History. She has done research in Australia's military archives in Canberra and visited the Buna coast in New Guinea during November 1967. Her work is an important addition to the annals of military history. Doubleday, Garden City, N. Y., 1974. 222 pages with index. $7.95.

Fighter, by Bryan Cooper and John Batchelor. This book is splendid for its illustrations by John Batchelor, especially when—as are many—they are reproduced in full color. In other respects, *Fighter* is less deserving of high praise. Its index is at best indifferently done, and the positioning of the captions on occasion is plainly mistaken. Nor are the text blocks impressive. And yet withal, the unvarying excellence of the draftsman's art makes this a book worth having. Charles Scribner's Sons, New York, N. Y., 1974. 153 pages with index. $9.95.

Hawks, by Page Shamburger and Joe Christy. Here is an account, constructed lovingly and with great care, of the long and honorable line of Curtiss Hawks, from the early 1920s into WW II. Often, the authors let the men who designed, or built, or sold, or flew them tell the story in their words—such practice here makes for great reading. The many photographs—in addition to the obligatory drawings and cutaways—surely required great effort to assemble; they are, for the most part, alive and serving to a good purpose. To get back to the words, there are two sentences by a pilot who served in China under Chennault that sum things up: "I loved those P-40s. They had their faults; but they'd get you home when nothing else would." Wolverine Press, Kalamazoo, Mich., 1972. 253 pages with indexes. $24.95.

The Private Pilot's Dictionary and Handbook, by Kirk Polking. A reference dictionary—for the student pilot or VFR pilot—to the most commonly used terms, operation procedures, and rules for VFR flight. It concentrates on single-engine aircraft and includes only those IFR terms or information which the VFR pilot might see listed on charts or hear in radio communications but not be required himself to use. Arco., New York, N. Y., 1974. 190 pages. $5.95 hardback, $3.95 paper.

—By Catherine L. Bratz

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20-24	$ 66,000	$12,500	$10.00	$6,000	$2,000	$
25-29	60,000	12,500	10.00	6,000	2,000	
30-34	50,000	12,500	10.00	6,000	2,000	
35-39	40,000	12,500	10.00	6,000	2,000	
40-44	25,000	12,500	10.00	5,250	2,000	
45-49	15,000	12,500	10.00	4,050	2,000	
50-59	10,000	12,500	10.00	3,000	2,000	
60-64	7,500	12,500	10.00	2,250	2,000	
65-69	4,000	12,500	10.00	1,200	2,000	
70-75	2,500	12,500	10.00	750	2,000	

The High-Option Plan ($100,000 Maximum)

20-24	$100,000	$12,500	15.00	$6,000	$2,000	$2
25-29	90,000	12,500	15.00	6,000	2,000	2.
30-34	75,000	12,500	15.00	6,000	2,000	2.
35-39	60,000	12,500	15.00	6,000	2,000	2.
40-44	37,500	12,500	15.00	5,250	2,000	2.
45-49	22,500	12,500	15.00	4,050	2,000	2.
50-59	15,000	12,500	15.00	3,000	2,000	2.
60-64	11,250	12,500	15.00	2,250	2,000	2.
65-69	6,000	12,500	15.00	1,200	2,000	2.
70-75	3,750	12,500	15.00	750	2,000	2.

* In the event of an accidental death occurring within 13 weeks of the accident, the AFA plan pays a lump sum benefit of $12,500 *in addition to* the benefit, except as noted under AVIATION DEATH BENEFIT, above.

** Each child is covered in this amount between the ages of six months and 21 years. Children under six months are provided with $250 protection once they are 15 days old and discharged from the hospital.

AVIATION DEATH BENEFIT: A total sum of $22,500 under the High-Option Plan or $15,000 under the Standard Plan is paid for death which is caused by an aviation accident *in which the insured is serving as pilot or crew member of the aircraft involved.* Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage.

CHECK THE ADVANTAGES OF THESE AFA PROGRAMS

Wide eligibility! If you're on active duty with the U.S. Armed Forces [regardless of rank], a member of the Ready Reserve or National Guard [under age 60], a Service Academy or college or university ROTC Cadet, you're eligible to apply for this coverage [see exceptions].

Keep your coverage at the low, group rate to age 75, if you wish.

Full conversion privilege. At age 75 [or at any time, on termination of AFA membership] the amount of insurance shown for your age group at the time of conversion may be converted to a permanent plan of insurance, *regardless of your health at that time.*

Disability waiver of premium, if you become totally disabled for at least nine months, prior to age 60.

Convenient premium payment plans. Pay direct to AFA or by monthly government allotment.

Reduction of cost by dividends. Net cost of insurance to AFA insured persons has been reduced by payment of dividends in eight of the last eleven years. However, dividends cannot, of course, be guaranteed.

Administered by insurance professionals on your Association's staff, for excellent service and low operating cost.

EXCEPTIONS:

Group Life insurance: Benefits for suicide or death from injuri intentionally self-inflicted while sane or insane shall not effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit sh not be effective if death results: [1] From injuries intentiona self-inflicted while sane or insane, or [2] From injuries sustain while committing a felony, or [3] Either directly or indirectly fr bodily or mental infirmity, poisoning or asphyxiation from carb monoxide, or [4] During any period a member's coverage being continued under the waiver of premium provision, or From an aviation accident, military or civilian, in which the sured was acting as pilot or crew member of the aircraft volved, except as provided under AVIATION DEATH BENEF

The insurance will be provided under the group insurance pol issued by United of Omaha to the First National Bank of M neapolis as trustee of the Air Force Association Group Insurar Trust. However, because of certain limitations on group insu ance coverage in those states, nonactive-duty members w reside in Ohio, Texas, Florida, and New Jersey are not eligib for AFA group life insurance coverage.

EFFECTIVE DATE OF YOUR COVERAGE

All certificates are dated and take effect on the last day of t month in which your application for coverage is approve Coverage runs concurrently with AFA membership. AFA Milita Group Life Insurance is written in conformity with the Insuran Regulations of the State of Minnesota.

Yes, now the Air Force Association offers members of the Unite States Air Force their choice of two great new life insuran plans, both designed to meet the special requirements of A Force personnel.

Planned for You

Both plans have been specifically designed to fill your particular needs. This is full-time, worldwide protection. There are no w clauses—no hazardous-duty restrictions, or geographical limitations on AFA life insurance protection. At AFA, our policy is to provi the broadest possible protection to our members, including those in combat zones.

Low Group Rates

And, as a member of AFA, you are able to secure this outstanding protection at low group rates. What's more, there's no increase premiums for flying personnel. In fact, in most cases, flying personnel are entitled to full death benefits. Only when death is caus by an aircraft accident in which the insured was serving as pilot or crew member does the special Aviation Death Benefit take effe

Higher Benefits for Young Families

The higher benefits for younger members make both plans particularly outstanding buys for the young family. The young family brea winner can make a substantial addition to his life insurance estate at a time when his family is growing up—when his financial oblig tion to his family is at its greatest!

CHOOSE EITHER OF THESE GREAT PLANS! MAIL THIS APPLICATION TO AFA TODAY!

REAKS THE BENEFIT BARRIER!

APPLICATION FOR
AFA MILITARY GROUP LIFE INSURANCE

United of Omaha

Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office: Omaha, Nebraska

ill name of member _____
Rank Last First Middle

ddress _____
Number and Street City State ZIP Code

ate of birth o. Day Yr.	Height Weight	Social Security Number

lease indicate category of eligibility nd branch of service.

- ☐ Extended Active Duty
- ☐ Ready Reserve or National Guard
- ☐ Air Force
- ☐ Other _____ (Branch of service)
- ☐ Air Force Academy ☐ _____ Academy
- ☐ ROTC Cadet _____ Name of college or university

Name and relationship of primary beneficiary

Name and relationship of contingent beneficiary

This insurance is available only to AFA members

- ☐ I enclose $10 for annual AFA membership dues (includes subscription ($9) to AIR FORCE Magazine).
- ☐ I am an AFA member.

lease indicate below the Mode of Payment and the Plan you elect.

HIGH OPTION PLAN			STANDARD PLAN	
embers Only	Members and Dependents	Mode of Payment	Members Only	Members and Dependents
☐ $ 15.00	☐ $ 17.50	**Monthly** government allotment. I enclose 2 months' premium to cover the period necessary for my allotment to be established.	☐ $ 10.00	☐ $ 12.50
☐ $ 45.00	☐ $ 52.50	**Quarterly.** I enclose amount checked.	☐ $ 30.00	☐ $ 37.50
☐ $ 90.00	☐ $105.00	**Semiannually.** I enclose amount checked.	☐ $ 60.00	☐ $ 75.00
☐ $180.00	☐ $210.00	**Annually.** I enclose amount checked.	☐ $120.00	☐ $150.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth Mo. Day Yr.	Height Weight

ave you or any dependents for whom you are requesting insurance ever had or received advice or treatment r: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart isease or disorder, stroke, venereal disease or tuberculosis? Yes ☐ No ☐

ave you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, sylum or similar institution in the past 5 years? Yes ☐ No ☐

ave you or any dependents for whom you are requesting insurance received medical attention or surgical dvice or treatment in the past 5 years or are now under treatment or using medications for any disease or isorder? Yes ☐ No ☐

F YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, egree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

_____

_____

_____

apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National ank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain ne plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance ill be effective until a certificate has been issued and the initial premium paid. I understand United reserves ne right to request additional evidence of insurability in the form of a medical statement by any attending hysician or an examination by a physician selected by United.

ate _____, 19 ____ _____
Member's Signature

/ 74
orm 3676GL App

Application must be accompanied by check or money order. Send remittance to: Insurance Division, AFA, 1750 Pennsylvania Avenue, NW, Washington, D.C. 20006

AFA State Contacts

Following each state name, in parentheses, are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

ALABAMA (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma, Tuscaloosa): **Cecil Brendle,** 3463 Cloverdale Rd., Montgomery, Ala. 36111 (phone 269-7252).

ALASKA (Anchorage, Fairbanks, Kenai): **Charles W. Lafferty,** 1045 Pedro St., Fairbanks, Alaska 99701 (phone 456-5167).

ARIZONA (Phoenix, Tuscon): **H. J. Bills,** 50 S. 45th Ave., Phoenix, Ariz. 85031 (phone 272-3272).

ARKANSAS (Blytheville, Fort Smith, Little Rock): **Frank A. Bailey,** 605 Ivory Dr., Little Rock, Ark. 72205 (phone 988-3432).

CALIFORNIA (Apple Valley, Burbank, Edwards, Fairfield, Fresno, Harbor City, Hawthorne, Long Beach, Los Angeles, Merced, Monterey, Novato, Orange County, Palo Alto, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, Santa Barbara, Santa Clara County, Santa Monica, Tahoe City, Vandenberg AFB, Van Nuys, Ventura): **Ben F. Snell,** 11 Sharon Dr., Salinas, Calif. 93940 (phone 422-7571).

COLORADO (Boulder, Colorado Springs, Denver, Ft. Collins, Pueblo): **James C. Hall,** P. O. Box 30033, Lowry AFB Station, Denver, Colo. 80230 (phone 366-5363, ext. 459).

CONNECTICUT (East Hartford, Torrington): **John McCaffery,** 117 Bridge St., Groton, Conn. 06340 (phone 739-7922).

DELAWARE (Dover, Wilmington): **Franklin R. Welch,** Greater Wilmington Airport, Bldg. 1504, Wilmington, Del. 19720 (phone 566-9520).

DISTRICT OF COLUMBIA (Washington, D. C.): **George G. Troutman,** 1025 Connecticut Ave., N.W., Washington, D. C. 20002 (phone 659-3900).

FLORIDA (Bartow, Broward, Daytona Beach, Ft. Walton Beach, Gainesville, Homestead, Jacksonville, Key West, Miami, Orlando, Panama City, Patrick AFB, Redington Beach, Sarasota, Tallahassee, Tampa, West Palm Beach): **A. W. Haymon,** 1421 S.E. 3d Ave., Ft. Lauderdale, Fla. 33316 (phone 525-4161).

GEORGIA (Athens, Atlanta, Savannah, St. Simons Island, Valdosta, Warner Robins): **D. L. Devlin,** 1651 McKinnon Dr., Savannah, Ga. 31404 (phone 234-0109).

HAWAII (Honolulu): **Campbell Palfrey, Jr.,** E. F. Hutton Co., Inc., 700 Bishop St., Honolulu, Hawaii 96813 (phone 521-2961).

IDAHO (Boise, Burley, Pocatello, Twin Falls): **Clarence E. Hall,** 3531 Winsdor Dr., Boise, Idaho 83705 (phone 344-7283).

ILLINOIS (Belleville, Champaign, Chicago, Deerfield, Elmhurst, O'Hare Field): **William A. Johnston,** 302 Harvard Dr., O'Fallon, Ill. 62269 (phone 632-2021).

INDIANA (Indianapolis, Lafayette, Logansport): **C. Forrest Spencer,** 910 W. Melbourne Ave., Logansport, Ind. 46947 (phone 753-7066).

IOWA (Des Moines): **Ric Jorgensen,** P. O. Box 4, Des Moines, Iowa 50301 (phone 255-7656).

KANSAS (Topeka, Wichita): **Don C. Ross,** 10 Linwood, Eastborough, Wichita, Kan. 67201 (phone 686-6409).

LOUISIANA (Alexandria, Baton Rouge, Bossier City, Monroe, New Orleans, Ruston, Shreveport): **Louis Kaposta,** La. Superdome, 348 Baronne St., New Orleans, La. 70112 (phone 422-5140).

MAINE (Limestone): **Alban E. Cyr,** P. O. Box 160, Caribou, Me. 04736 (phone 492-4171).

MARYLAND (Baltimore): **James W. Poultney,** P. O. Box 31, Garrison, Md. 21055 (phone 363-0795).

MASSACHUSETTS (Boston, Falmouth, Florence, Lexington, L. G. Hanscom Fld., Taunton, Worcester): **Arthur D. Marcotti,** 215 Laurel St., Melrose, Mass. 02146 (phone 665-5057).

MICHIGAN (Dearborn, Detroit, Kalamazoo, Lansing, Marquette, Mount Clemens, Oscoda, Sault Ste. Marie): **Stewart Greer,** 18690 Marlowe Ave., Detroit, Mich. 48235 (phone 273-5115).

MINNESOTA (Duluth, Minneapolis, St. Paul): **Victor Vacanti,** 8941 10th Ave., Minneapolis, Minn. 55420 (phone 854-3456).

MISSISSIPPI (Biloxi, Columbus, Jackson): **Wm. Browne,** P. O. Box 2042, Jackson, Miss. 39205 (phone 352-5077).

MISSOURI (Kansas City, Knob Noster, Springfield, St. Louis): **Robert E. Combs,** 2003 W. 91st St., Leawood, Kan. 66206 (phone 649-1863).

MONTANA (Great Falls): **Jack K. Moore,** P. O. Box 685, Great Falls, Mont. 59403 (phone 761-2555).

NEBRASKA (Lincoln, Omaha): **Lyle O. Remde,** 4911 S. 25th St., Omaha, Neb. 68107 (phone 731-4747).

NEVADA (Las Vegas, Reno): **Floyd White,** 2446 E. San Lucas Dr., Las Vegas, Nev. 89121 (phone 384-8077).

NEW HAMPSHIRE (Manchester, Pease AFB): **R. L. Devoucoux,** 270 McKinley Rd., Portsmouth, N. H. 03801 (phone 669-7500).

NEW JERSEY (Andover, Atlantic City, Belleville, Camden, Chatham, Cherry Hill, E. Rutherford, Fort Monmouth, Jersey City, McGuire AFB, Newark, Trenton, Wallington, West Orange): **Amos L. Chalif,** 162 Lafayette, Chatham, N. J. 07928 (phone 635-8082).

NEW MEXICO (Alamogordo, Albuquerque, Clovis): **John J. Dishuk,** 8204 Harwood Ave., N.E., Albuquerque, N. M. 87110 (phone 298-0788).

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NORTH CAROLINA (Charlotte, Fayetteville, Goldsboro, Greensboro, Raleigh): **Monroe E. Evans,** 607 Tokay Drive, Fayetteville, N. C. 28301 (phone 488-6008).

NORTH DAKOTA (Grand Forks, Minot): **Kenneth A. Smith,** 511 34th Ave., So., Grand Forks, N. D. 58201 (phone 722-3969).

OHIO (Akron, Cincinnati, Cleveland, Columbus, Dayton, Newark, Toledo, Youngstown): **Robert L. Hunter,** 2811 Locust Dr., Springfield, Ohio 45504 (phone 255-5304).

OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **David L. Blankenship,** P. O. Box 51308, Tulsa, Okla. 74151 (phone 835-3111, ext. 2207).

OREGON (Corvallis, Eugene, Portland): **John G. Nelson,** 901 S.E. Oak St., Portland, Ore. 97214 (phone 233-7101).

PENNSYLVANIA (Aliquippa, Allentown, Chester, Erie, Homestead, Horsham, Lewistown, New Cumberland, Philadelphia, Pittsburgh, Washington, Willow Grove, York): **Frank E. Nowicki,** 280 County Lane Rd., Wayne, Pa. 19087 (phone 672-4300, ext. 62).

RHODE ISLAND (Warwick): **Matthew Puchalski,** 143 Sog Riang, Warwick, R. I. 02886 (phone 737-2100, ext. 27).

SOUTH CAROLINA (Charleston, Columbia, Greenville, Myrtle Beach, Sumter): **Burnet H. Maybank,** P. O. Box 126, Charleston, S. C. 29402 (phone 722-4735).

SOUTH DAKOTA (Rapid City): **Kenneth Roberts,** P. O. Box 191, Rapid City, S. D. 57701 (phone 342-0191).

TENNESSEE (Chattanooga, Knoxville, Memphis, Nashville, Tullahoma): **James W. Carter,** 314 Williamsburg Rd., Brentwood, Tenn. 37027 (phone 834-2008).

TEXAS (Abilene, Austin, Big Spring, Corpus Christi, Dallas, Del Rio, El Paso, Fort Worth, Houston, Laredo, Lubbock, San Angelo, San Antonio, Sherman Waco, Wichita Falls): **Stanley L Campbell,** 119 Bluehill, San Antonio, Tex. 78229 (phone 342 0006).

UTAH (Brigham City, Clearfield Ogden, Provo, Salt Lake City) **Verl G. Williams,** P. O. Box 486 Clearfield, Utah 84015 (phone 777-5370).

VERMONT (Burlington): **R. F. Wissinger,** P. O. Box 2182, S. Burlington, Vt. 05401 (phone 863-4494).

VIRGINIA (Arlington, Danville, Harrisonburg, Langley AFB, Lynchburg, Norfolk, Petersburg, Richmond, Roanoke): **Orland J. Wages,** 210 W. Bank St., Bridgewater, Va. 22812 (phone 828-2501, ext. 91).

WASHINGTON (Bellevue, Port Angeles, Seattle, Spokane, Tacoma): **V. Lee Gomes,** P. O. Box 88850, Seattle, Wash. 98188 (phone 543-3860).

WISCONSIN (Madison, Milwaukee): **Kenneth Kuenn,** 3239 N. 81st St., Milwaukee, Wis. 53222 (phone 757-5324).

WYOMING (Cheyenne): **Elmer F. Garrett,** 109 E. 19th St., Cheyenne, Wyo. 82001 (phone 632-9314).

MARK YOUR CALENDAR . . . .

PLAN NOW TO ATTEND . . . .

AFA's 1974 Annual National Convention and Aerospace Briefings and Displays

SEPTEMBER 16, 17, 18, 19
WASHINGTON, D. C.

AFA's 1974 Annual National Convention and Aerospace Briefings and Displays will be held at the Sheraton-Park and Shoreham Hotels, September 16–19. Accommodations are limited at the Shoreham Hotel and will be used primarily by other organizations meeting in conjunction with AFA's 1974 National Convention.

All reservation requests for rooms and suites at the Sheraton-Park Hotel should be sent to: Reservations Office, Sheraton-Park Hotel, 2660 Woodley Road, N. W., Washington, D. C. 20008. Be sure to refer to AFA's Annual National Convention when requesting your reservations. Otherwise, your reservation requests will not be accepted by the Sheraton-Park.

AFA's Annual National Convention activities will include luncheons for the Secretary of the Air Force and the Air Force Chief of Staff and the Air Force Anniversary Reception and Dinner Dance. The National Convention will also include AFA's Business Sessions, Symposium, an Air Force Reserve and Air National Guard Seminar, and several other invitational events, including the President's Reception, the Annual Outstanding Airmen Dinner, and the Chief Executives' Reception and Buffet Dinner.

We urge you to make your reservations at the Sheraton-Park Hotel as soon as possible in order to obtain your reservations. Arrivals after 6:00 p.m. require guaranteed payment for the night of arrival.

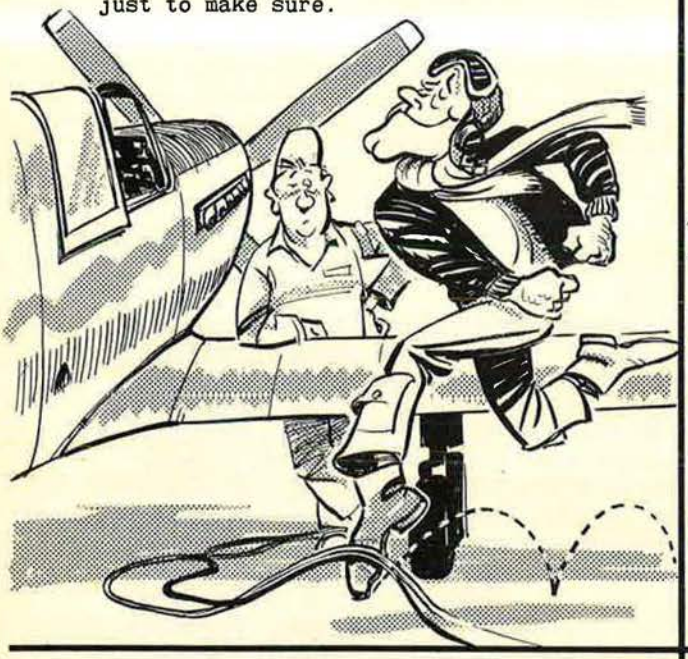
Bob Stevens'

"There I was..."

AGAIN, WE QUOTE SOME GEMS FROM THAT VENERABLE CONFEDERATE AIR FORCE FLIGHT ORDER (ISSUED FROM "THE OCTAGON" TO REBEL FLIGHT CREWS FOR A FLIGHT TO WRIGHT-PAT. IN MAY 1967).

THE PREFLIGHT

(1) Approach the aircraft in a reckless, devil-may-care manner, as this makes a big impression on bystanders. . . . Ask the nearest small boy what type aircraft this is—just to make sure.



(2) Check all fuel tanks to see if the air has been removed therefrom. Be sure to kick all tires vigorously. When you come to a complicated part of the airplane, stare at it seriously for several seconds. . . . This creates a favorable impression on your crew chief. . . .

(3) When you have finished the preflight, ask another bystander what aircraft this is. Then proceed rapidly to your assigned aircraft and repeat steps 1 and 2.

(4) To enter the aircraft, approach it from the left side and leap lightly onto the access ladder without looking. Then pick yourself up off the ground in a casual manner, locate the ladder, and climb the steps. . . .

P.S. To control acrophobia, <u>don't look down</u> when going up the ladder!

Bob Stevens

When record altitudes and 24 hours are just one flight,

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The E-Systems L450 has set 16 world flight records for piloted turboprop aircraft. It also flies as a remotely piloted vehicle (RPV) and it set flight endurance records for RPVs during Air Force tests. It can be equipped to act as a low cost communications relaying satellite, to gather earth resources data, photo-mapping the earth, or serving wide-area sentry duty.

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We're building the F-15 to be one of the world's two most versatile fighters.

We build the other one too.

The F-15 Eagle, now well past its 1300th test flight, is a totally uncompromised air superiority fighter. In this role alone, at the planned production total of 749 aircraft, it will also be one of the two most cost-effective fighters ever in the USAF inventory.

The other? Another McDonnell Douglas product, the F-4 Phantom.

Now the Air Force is proving that the Eagle, like the multi-mission Phantom, can do more than control the skies. With its ample avionics capability, power reserve and air-to-ground ordnance on its wing stations, the Eagle can perform interdiction and ground-support missions as well.

In addition, the two-place TF-15 trainers now flying readily adapt to the reconnaissance mission with cameras and surveillance gear stored in existing bays.

We built the F-15 to be the world's best air superiority fighter. But we didn't stop there, because we know the fighter pilot's job is never done until the battlefield is secured—in the air, and on the ground.

The multi-mission-capable Eagle. It's what you'd expect from the team that created the Phantom.

MCDONNELL DOUGLAS