

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

USAF'S ALL STARS



B-1



F-15



A-10



F-16

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ABOUT THE COVER



USAF's four "All Stars"—the B-1, the F-15, the F-16, and the A-10—are among the new systems needed to maintain a global balance of forces, discussed by JCS Chairman Gen. George S. Brown in the exclusive interview starting on p. 33.

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The Boeing YC-14 two-engine jet transport will never land in the Grand Canyon.

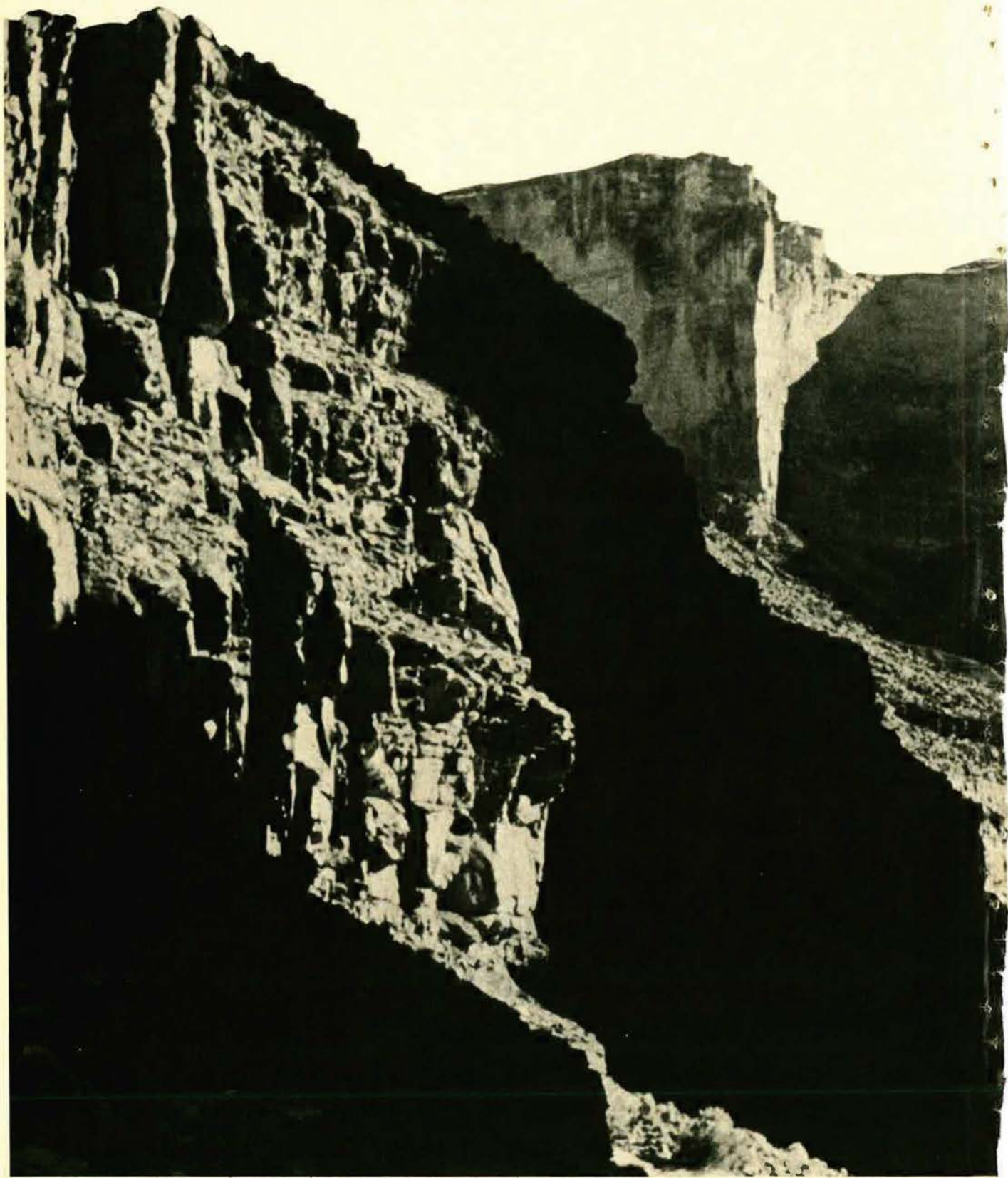
But the point is that it could. And a jet plane that could land in the Grand Canyon could land almost anywhere

on earth. Right?

This advanced medium STOL aircraft now being built for the U.S. Air Force can operate from unimproved fields less than half the length of those required by standard aircraft of comparable size.

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The Grand Canyon helps us make another point. The YC-14 can drop steeply into a short field on a six-degree glide path. Load or unload



something as big and bulky as nine fully-loaded army jeeps, plus troops. And climb out again. Safely.

What makes it all possible? Upper surface blowing. Boeing engineers have used the Coanda effect to create

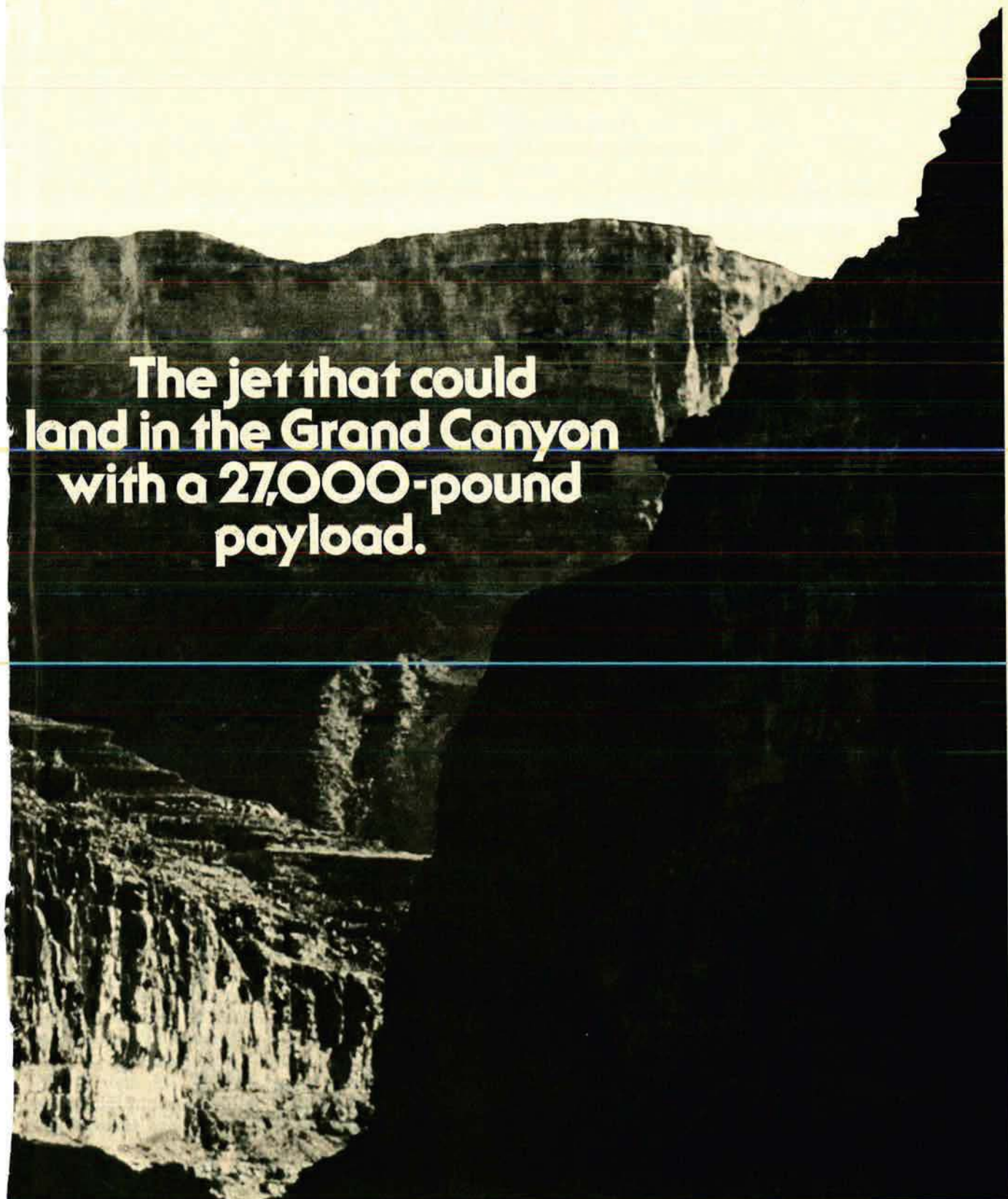
powered lift. Thrust from the aircraft's two engines is blown over the wing flaps, and is directed downward for added, powered lift.

There's no plane like it in all the world. Even if it never lands in the Grand Canyon.



BOEING YC-14

**The jet that could
land in the Grand Canyon
with a 27,000-pound
payload.**



The New Soviet Threat to NATO

By John L. Frisbee
EXECUTIVE EDITOR, AIR FORCE MAGAZINE

DR. Joseph Luns, NATO's Secretary-General, in an article beginning on p. 58 of this issue of AIR FORCE Magazine, finds small comfort in détente as a reason for NATO relaxing its guard and points to the continuing expansion of the Warsaw Pact's combat capability as a principal reason. (Warsaw Pact members are the USSR, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, and Romania.) The specifics of Soviet military activities in Eastern Europe serve to reinforce Dr. Luns's judgment and, we hope, point up the rash imprudence of perennial attempts to cut deeply into the US contribution to NATO.

First, we must let some air out of a myth that has been around since the McNamara days, when military imbalances too often were put right with a pencil. It is self-deception to cite the fact that the fifty-eight Warsaw Pact divisions confronting twenty-five NATO divisions along the central front, from the Baltic to Austria, are thirty to forty-five percent smaller in manpower than NATO divisions. The NATO edge is in support troops; the significant imbalance is in the so-called tail-to-teeth ratio. The weapons, the fighting elements, in Pact divisions give them more firepower and combat capability than their NATO counterparts.

It likewise has been fashionable for too many years to slough off Pact superiority in troop strength by inflating the immeasurable asset of combat experience on the NATO side. Too much is made of that point. Three-fourths of NATO's forces are provided by the European members of the Alliance. None of them has had combat experience comparable to ours in the past twenty years.

Now for a look at the Pact buildup.

A number of Western observers believe that the combat capability of Soviet divisions in East Germany, Poland, and Czechoslovakia has been increased by about forty percent over the past five years—most of that increase while Mutual and Balanced Force Reduction negotiations have been going on. Soviet units that could be committed rapidly on NATO's central sector account for more than fifty percent of Pact forces in that area.

Most of the new equipment in Eastern Europe is designed for offensive operations. The USSR reportedly has deployed about 4,000 new T-62 main battle tanks in the forward Pact territories. Meanwhile, older T-54 and T-55 tanks were not withdrawn. Result—the number of tanks in each battalion has been increased by about a third. Pact forces now have more than 16,000 tanks near the central front—nearly triple the NATO strength in that area.

At the same time, more than 5,000 armored personnel carriers (APCs) have been moved into forward areas. Artillery assigned to Pact divisions has been increased 100 percent. Much of it is self-propelled. Mobility is the keynote.

Army air defense units on the central front are being equipped with the USSR's most advanced, mobile ground-to-air missiles, including the SA-4, SA-6, and SA-9. Each division has a large number of the radar-directed, quad-mounted ZSU-23 antiaircraft guns used so effectively in the Middle East. (The USSR holds a lead of 100 to one over the US in mobile battlefield air defense missiles and AAA guns.)

On the air side, the firepower delivery capability of combat aircraft assigned to Pact units has been increased by some 200 percent. The Pact now has about twice as many tactical aircraft on the central front as do the Allies. Soviet units in Germany are being reequipped with the MiG-23 Flogger, a tac fighter that has higher speed and greater range than the F-4.

Also assigned to Soviet units in East Germany is the swingwing Su-17 Fitter "C." The Su-19 Fencer, an aircraft similar to our F-111, is being based in the Western USSR. All of these newer aircraft have the range and performance to attack key targets in NATO countries without having to stage forward or use tankers. These deployments have produced a near revolution in Pact air capabilities. The possibility of NATO's getting either strategic or tactical warning is greatly reduced, providing a strong argument for AWACS, with its extended detection range and relative invulnerability to jamming, as an essential element of the NATO deterrent.

The Pact's shorter range MiG-17, -19, and -21 aircraft remain in the satellite air forces, but all except the MiG-17 are capable of both nuclear and conventional operations.

US defense critics continue to question the need and the wisdom of keeping some 7,000 US tactical nuclear

weapons in Europe. The Soviets, though, see tac nukes in a different light. A year ago, they were reported to have 3,500 tactical nuclear warheads in Eastern Europe. Now they are believed to have increased the number in the Pact area, all stored in hardened facilities.

The USSR also has built superhardened command posts in Eastern Europe and developed a highly sophisticated and hardened command control system that is increasingly secure from either destruction or electronic countermeasures.

Another development little noted in the US is the USSR's "unsurpassed capability to conduct chemical warfare," described by Gen. George Brown, Chairman of the Joint Chiefs of Staff, in his FY '76 Posture Statement. Indications are that the Soviets have stored large quantities of chemical (perhaps also biological and radiological) ordnance in Eastern Europe. Their tanks and armored personnel carriers are equipped to protect troops from all CBR agents, and in field exercises Pact troops practice offensive chemical warfare as well as decontamination and protective measures. As an indication of the extent of Soviet preparedness for CBR operations, it has been reported that, during the Yom Kippur War, the Soviets supplied enough protective equipment and antidotes for all Arab troops.

It also is evident from Pact training exercises that great stress is put on night fighting, never a favorite tactic of US forces. Russian night-vision equipment was combat tested during the October 1973 Yom Kippur War, where individual Arab soldiers, tanks, APCs, and other mobile equipment had night-vision devices. As one observer put it, "the battlefield was totally illuminated."

One of the most worrisome of Soviet developments lies in the field of ground-based electronic warfare (EW). Today, the US Army has only a limited EW capability. In contrast, Soviet divisions include EW battalions with both offensive and defensive capabilities. Every combat staff has an EW officer to coordinate ground and airborne EW. The Soviets believe that NATO forces in general, and US forces in particular, depend too heavily on communications and thus could be hamstrung by massive jamming and other electronic warfare measures.

Soviet combat capabilities can be assessed with some confidence. The hardware, deployment, and tactical developments noted here are in consonance with the Soviet doctrinal teachings of seizing the initiative by deception, surprise, and massed combined arms operations spearheaded by aircraft and armor. If the gap between NATO and Pact capabilities continues to widen at its present rate, the USSR soon will achieve a large enough margin of superiority to control or to conquer Western Europe.

Some of the tactics used in the Yom Kippur War by Russia's Arab pupils may be a guide to potential Soviet strategy and tactics against NATO. If so, the Soviets probably would rely largely on battlefield missiles, AAA, and ECM for air defense, and on missiles and artillery for close support of blitzkrieg-like armored thrusts into NATO territory. But unlike the Middle East war, the Soviets in Europe would have such a preponderance of airpower that they likely would use con-

ventionally armed tactical aircraft, supported by medium bombers, to rapidly gain air superiority (hence tactical nuclear superiority) by destroying NATO aircraft on the ground and in the air. It then would be relatively safe for them to deliver—or threaten to deliver—tactical nuclear weapons by aircraft, theater-based M/IRBMs, and short-range missiles.

Soviet intentions in the NATO area are less clear than their capabilities. For more than a decade, the Soviets have focused their attention (and ours) on "wars of national liberation." But now the Soviet focus has shifted to NATO Europe, beset by economic troubles, its southern flank in disarray (*see p. 73*), its plans for modernization and standardization slowed by internal rivalries and suspicions, and by public apathy on both sides of the Atlantic.

Since the USSR and its Pact partners already have far more arms than are needed for defense, one can only conclude that the buildup of Pact forces serves an expansionist objective. That objective may be the "Finlandization" of Western Europe through massive military capabilities that would persuade our NATO partners to accede peacefully to Soviet economic and political demands—including the expulsion of the US from NATO. That is the way some Sovietologists see the situation.

Other students of Soviet policy are convinced that, rather than waiting out a slow and perhaps reversible process of Finlandization, the Soviets will move against NATO whenever they are satisfied the US strategic nuclear deterrent has been neutralized.

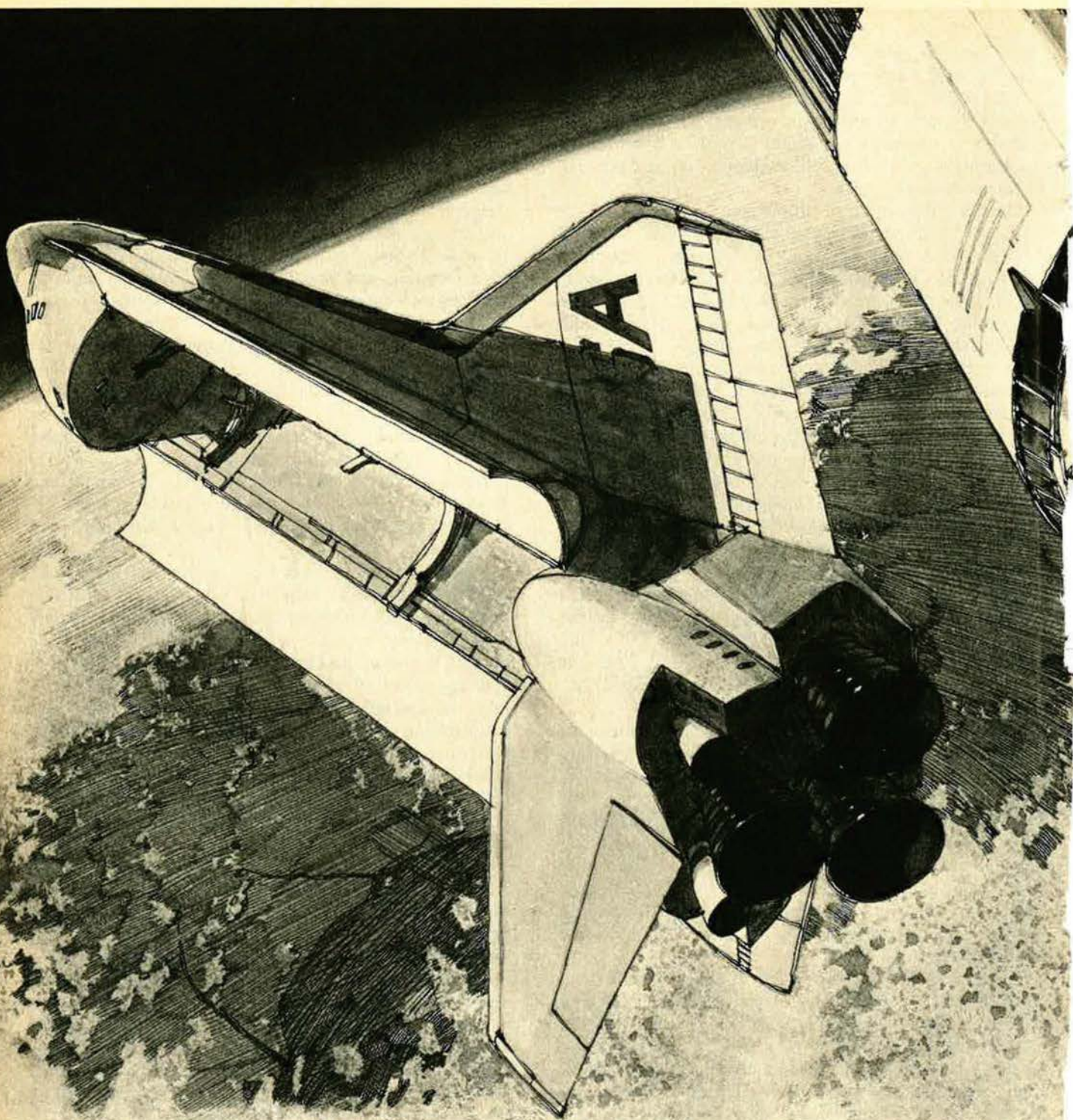
Eventual Soviet dominance in Europe is not inevitable, any more than Hitler's conquest of Europe was inevitable in 1936 when he reoccupied the Rhineland. But there is a point—two, three, perhaps five years ahead—when even crash programs will not serve to restore a balance that could assure the survival of our NATO allies and protect the vital interests of this country.

US membership in NATO is the mortar that holds the Alliance together. Unless this country takes the lead in reviving the spirit and marshaling the resources and talent of NATO, its military decline vis-à-vis the Warsaw Pact is not likely to be reversed.

Turning things around will take more than the President's assurance that the US stands firm in its dedication to the preservation of NATO. It will require public backing based on an understanding of two facts: First, the Communist threat to Western Europe is greater today than at any time during the cold war. Second, as Dr. Luns puts it, "the United States is in NATO to defend the United States."

Helping achieve that understanding is a task to which all of us can give our unqualified support. ■

In 11 years, our RL-10 engine has never



As the power behind NASA's Centaur upper-stage rocket, the Pratt & Whitney Aircraft RL-10 has helped launch many of the nation's important scientific payloads.

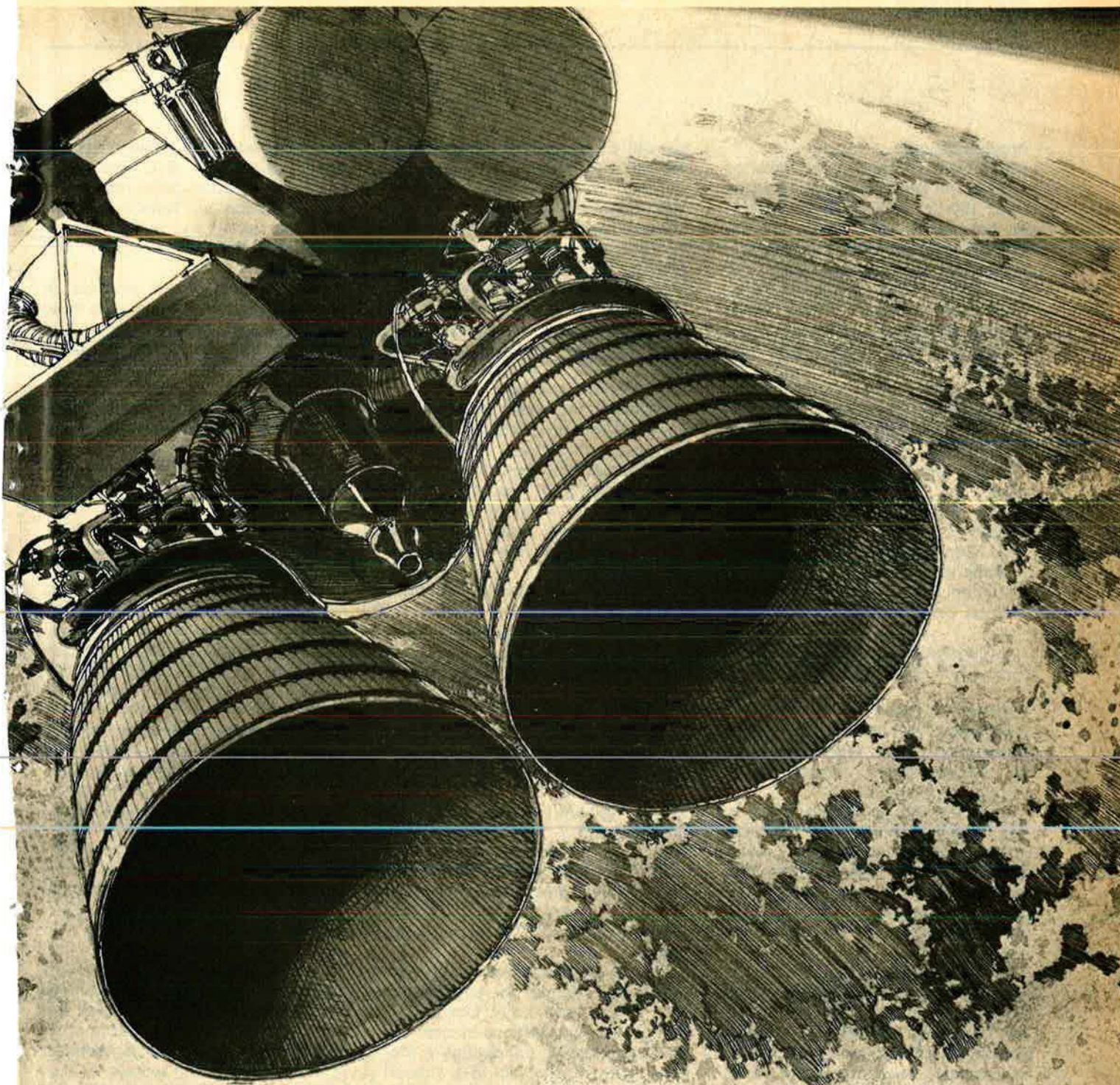
For instance, Surveyor Moon Soft-Lander; Applications Technology Satellite; Orbiting Astronomical Observatory; Mariner Mars Orbiter; Pioneer Jupiter Fly-by; Intelsat IV

Communications Satellite; Helios Sun Probe are among those sent into space by the RL-10.

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failed to deliver the goods in space.



longer than required during a typical Centaur mission. Another has been test fired 223 times without overhaul.

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Applies Equally

Gentlemen: I have just finished reading "In Defense of the Terrazzo Gap" [by Lt. Col. Monte D. Wright] in the April 1975 issue of AIR FORCE Magazine and want to commend him on the sensitivity and soundness of the article as it applies equally to the United States Military Academy at West Point.

Colonel Wright described accurately and understandingly the natural tension that exists between things of the heart and things of the mind within soldiers' lives. Thank you both for doing it so well.

May I have permission to reproduce and distribute the article among officers and cadets at the Military Academy at West Point?

Lt. Gen. Sidney B. Berry, USA
Superintendent
United States Military Academy
West Point, N. Y.

• *Permission granted with pleasure.*—THE EDITORS

Expensive Lesson

Gentlemen: I couldn't let your editorial in [June] AIR FORCE go by without some comment and some shared memories.

Vietnam was a terrible price to pay, but if the nature of airpower emerges better understood, something may have been gained that many have long sought. You wrote about the fallacy of Maxwell Taylor's concepts of escalated response.

I well recall the concern in the Air Force in the mid-fifties. At the time, Dale O. Smith wrote in the *Air University Quarterly Review* a very short article likening the notion of escalated response to two cowboys from rival ranches meeting at the only waterhole in sight. Their confrontation grew from personal insults to use of personal weapons to calling in cowboy reinforcements for both sides to a full range war between rival spreads.

His analogy was good. I have often thought of Vietnam in that context. Col. Royal H. Roussel and then-Col. Jerry Page also did some thoughtful writing on the matter, but never with the direct simplicity that Smith produced: Don't let matters

get out of hand. The other side of the coin, of course, is to have the will and the capability not to let matters get out of hand.

I also recall an early fifties article in *Flying Magazine* by Gill Robb Wilson in which he warned that the basic concepts of airpower "could fade away without enough public outcry to disturb a nursery." They may not have faded away, but they were diluted to the point that, in part, Vietnam resulted.

Perhaps the real paradox will be that those in positions of political power, or at least those of like convictions, who contributed much to the tragedy of Vietnam may be the ones who make it possible to return to more solid conceptual foundations. But, how expensive a lesson it was.

At any rate, an excellent editorial. I enjoyed it.

Col. Marvin M. Stanley,
USAF (Ret.)
Professor of Business Admin.
College of William and Mary
Williamsburg, Va.

B-1 "Educational Effort"

Gentlemen: Claude Witze's editorial, "Stopping the B-1, Dishonestly," which appeared in the June 1975 issue of AIR FORCE Magazine, is well endowed with the sort of "half truths, outright errors, distortions, and misinterpretation" which it charges to the *Stop the B-1 Bomber: National Peace Conversion Campaign*.

In particular, the article devotes substantial space to suggestions that Clergy and Laity Concerned, one of the organizations sponsoring the Campaign, is conducting a lobbying effort against the B-1, funded in part by tax-exempt contributions. The article goes on to suggest similarities between CALC's fund-raising methods and the money "laundering" of the discredited 1972 Nixon reelection campaign.

As evidence to support his allegations, Mr. Witze cites a CALC fund-raising appeal which asks, in Mr. Witze's words, "for contributions for a fight against it [the B-1] in Congress."

The truth is that the letter to which Mr. Witze refers does not

ask for support for a congressional fight against the B-1. The letter takes no position with respect to any legislation, but instead presents the facts about the public controversy over the B-1 program, and concludes:

"CALC must reach millions of people with these facts. We need additional staff, research tools, and funds to build a strong program. We need your help to raise \$100,000 to carry us through the Campaign." CALC's Campaign is an educational effort, not a venture in lobbying.

The success of American democracy depends upon the active participation of the people in debate on important public policy decisions. That participation depends, in turn, upon the free availability of information. For too long, the military corporations and the Pentagon have been the public's chief source of information about weapons systems like the B-1. Neither the corporations nor the Pentagon are disinterested observers, concerned only with national security: careers and profits are staked on the outcome of military procurement decisions. The information which they contribute to public debate is clearly biased by these considerations.

The Air Force, Rockwell International, General Electric, and Boeing are all committed to the development of the B-1, and are actively lobbying for its purchase. Even among the defense "experts" in whom Mr. Witze places his faith, there is considerable disagreement about the need for a new manned bomber. Despite this fact, all of the official (and corporate) information which reaches the public is intended to promote the B-1 system. If dissenting viewpoints are to be heard, it must fall to organizations like CALC to bring them to the attention of the people.

Mr. Witze's reference to Watergate is particularly ironic. Nixon, an avid B-1 supporter, earned his infamy in part by placing private interests ahead of the public welfare in the name of "national security." The activities of the pro-B-1 lobby seem to be based on the same principle.

CALC will continue to support

its Campaign with small contributions from concerned individuals. When and if the CALC Campaign ceases to represent the concerns of the American people, it will cease to exist.

Don Luce, Executive Director,
 Jamie Lewontin, B-1 Campaign
 Coordinator
 Clergy and Laity Concerned
 New York, N. Y.

• *AIR FORCE Magazine*, which operates under the same press freedoms as do other American publications, felt a responsibility to set the record straight, particularly when Mr. Luce's and Mr. Lewontin's "educational effort" does violence to the truth. The B-1 slide show, sponsored by CALC and the American Friends Service Committee, was highly distorted, as Mr. Witze pointed out in his June column. One man's lobbying may be another man's educational effort, but it is difficult to conceive of a "Stop the B-1 Bomber" campaign that does not have the Congress as its central target. The right to dissenting views, of course, is basic to a free society. But the same right surely extends to Mr. Witze, who has pointed out severe weaknesses in both the case made by the anti-B-1 groups and the means employed to raise funds for their effort.—THE EDITORS

Only a Myth?

Gentlemen: The article, "The Domino Effect of Personnel Cuts," by Ed Gates, June issue, was of more than passing interest to those of us who are working on the costs of personnel programs. It was certainly an interesting and informative article and we appreciate your continuing interest in this thorny problem.

It may be of interest to you and your readers to consider a slightly different version of the middle graph on page 38, "Average Cost per Member of USAF." Consider that graph plotted in constant 1976 dollars as determined from the Department of Defense Deflators, OASD(C), February 1975 (FY 1976 = 1.000).

The conclusion one might infer from this information is that increasing per member costs are entirely due to inflation. However, to the extent that benefits have eroded (fewer things are being paid for) and changes in definitions of personal expenditures have occurred (changed ground rules), this conclusion may not be precise. . . .

I do believe it is reasonable to

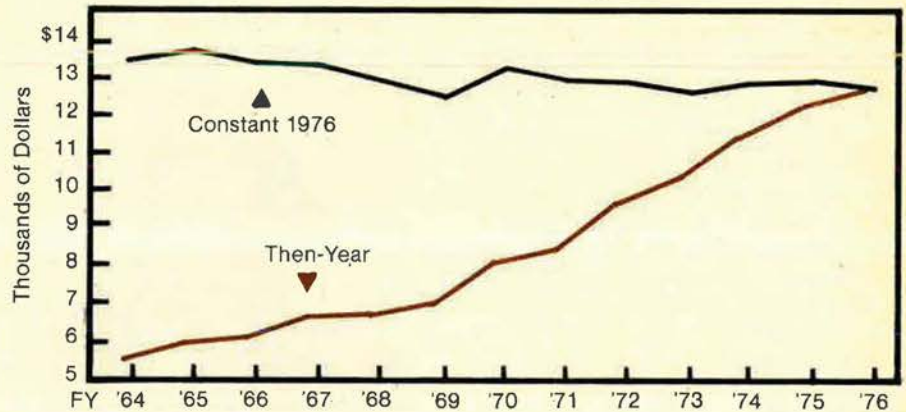
say that *most* of the increase in personnel costs has been due to inflation, and this circumstance does not leave military members much better off relative to the economy than "holding their own."

This is in sharp contrast to the opinion of many that the military members are receiving exorbitant increases in pay and benefits

ect engineer in the engineering division of an Air Logistics Center. This is probably considered a major Air Force engineering activity; there are approximately 100 officers and 150 civilian engineers working there. Most of the officers (especially the lieutenants and captains) hold advanced degrees, the majority of which are in the various

AVERAGE COST PER MEMBER OF USAF

(Thousands of Dollars)



DoD inflation factors according to "Department of Defense Deflators," OASD(C), February 1975, for Personnel Costs—Pay and non-Pay.

1964	.409	1967	.493	1970	.613	1973	.818
1965	.425	1968	.518	1971	.653	1974	.882
1966	.463	1969	.550	1972	.744	1975	.943
						1976	1.000

to achieve "comparability." This should also hint that perhaps comparability is more myth than a reality. One would expect that if comparability is being achieved the "real" average personnel cost per member would have risen over the last ten to twelve years, rather than remaining relatively constant as it has.

Just as a matter of clarity, I believe the legends for the ordinates on the top and bottom graphs on page 38 were interchanged: the top graph is "Personnel, Thousands of Dollars" and the bottom one is "Billions of Dollars."

Capt. David K. Stubbs
 Fairfax, Va.

• *The legends for ordinates of the graphs on page 38 were indeed interchanged. We regret this error.* —THE EDITORS

Advanced Education Wasted

Gentlemen: In Mr. Gates's article on the "graduate degree deficit" in the April issue of *AIR FORCE Magazine*, he notes that the House Appropriations Committee "wants to know exactly how the services determine their graduate-level job needs." So do I.

I am currently assigned as a proj-

branches of engineering. In my section, for instance, there are two captains and three first lieutenants with (collectively) five BS and two MS degrees in mechanical engineering, an MBA, and an MS in engineering management. Three of the four advanced degrees were AFIT-funded.

My job consists primarily of decision-making involving interchangeability of hardware, interpretation of technical orders and military specifications, and development of minor repair methods. After I had been here a couple of months, I began to feel that this did not require my graduate-level background in analytical modeling of combustion processes. Wishing to dismiss my own situation as an isolated instance, I began inquiring of my colleagues whether they felt similarly. In over two years of inquiring, I have found just two people who felt their advanced degrees to be helpful (and none who found them necessary) in the performance of their Air Force jobs. In fact, most of those who hold "only" bachelor's degrees felt, for the most part, that their educations were not being used.

Unusual? I wish it were, but the opinions collected came from a

Airmail

cross-section of BS, MS, and Ph.D. holders from several AFLC and AFSC installations, including three Systems Command labs. If the requirements for technical expertise aren't there, where are they?

I strongly suspect that the Air Force's various advanced-degree programs are more valuable as career motivation retainability "carrots" than as a means of meeting actual job requirements. It may be that these programs are entirely justifiable and cost-effective as carrots, but if that's what we're doing let's not kid ourselves or Congress.

The idea of having a 1.5-to-1 ratio between graduate degrees and validated billets does indeed, as Mr. Gates notes, "sound reasonable," but it is best appreciated by those of us who have spent some time in the surplus fifty percent. Advanced technical education is highly specialized and time-sensitive; it loses much of its value if not put to use soon after it is acquired. Even if the advanced-degree billets really are valid, the 1.5-to-1 ratio amounts to a substantial overrun in Air Force educational costs to the extent that unused education is deteriorating. We ought to be able to do better than that for the taxpayers.

1st Lt. William C. Mayse
Citrus Heights, Calif.

Wrong University

Gentlemen: I wish to point out an error in your June '75 issue. On page 70 ["Arnold Air/Angels Conclave: A Busy Time in Louisville"], you state, "... The 1976 Conclave in Philadelphia will be hosted by the AAS/Angel Flight at the University of Pennsylvania." However, the AAS/Angel Flight at the Pennsylvania State University, not its counterpart at the University of Pennsylvania, is the host Squadron for this event.

Although this is a minor point, any AAS member who reads the article, and uses it in finding information on the upcoming Conclave, might inquire at the wrong place, which would not help him or the Conclave staff. . . .

C/1st Lt. Stephen A. Hoffman
Information Officer
AAS/AF National Conclave '76
University Park, Pa.

Anyone Know?

Gentlemen: Where is Lt. Vernon R. Richards of the 361st Fighter Group, Eighth Air Force, World War II?

To date I have:

Written to a Vernon R. Richards who turned out to be the wrong one;

Checked with fighters' and aces' associations;

Written to the Mayor of Richards' home town. Letter returned—unknown;

Written to the Chief of Police of



Lt. Vernon Richards as he appeared on the December 1944 cover of AIR FORCE Magazine. The fighter pilot had just returned from a seven-hour escort mission over Germany.

the same town. Letter returned—no police department!

Now I turn to AIR FORCE Magazine readers.

I am compiling a book dealing with equipment used by the Air Forces in WW II and would like to contact him regarding some of the gear shown in the photo.

David L. Marshall
WW II Aviation Society, Inc.
P. O. Box 262
Mount Holly, N. J. 08060

UNIT REUNIONS

Air Commandos

The 1975 Air Commando reunion will be held at Fort Walton Beach, Fla., October 10-12. All past and present members of Air Commando or Special Operations units and wives are invited. For details and advance reservations write

Reunion Committee
Air Commando Association
P. O. Box 7
Mary Esther, Fla. 32569

Interceptor Weapons School

The USAF Interceptor Weapons School, Tyndall AFB, Fla., is holding its 2d bi-annual reunion for past and present staff members October 3-5 at Panama City Beach, Fla. Address inquiries to Eyewash Reunion Committee 6025 Pridgen Rd. Panama City, Fla. 32401

Spookies

A Spooky (AC-47) reunion will be held in conjunction with the Air Commando reunion (see above) at Ft. Walton Beach, Fla. Former members of AC-47 units and wives are invited. For details and advance reservations write

Spooky Reunion Committee
Air Commando Association
P. O. Box 7
Mary Esther, Fla. 32569

World War I Overseas Flyers

This year's reunion of World War I Overseas Flyers will be held October 16-18. It will begin in San Diego and end in Los Angeles, Calif. Please register promptly as a fairly accurate count is necessary to finalize arrangements. You may have as many guests as you wish for any of the functions, provided reservations are made in advance. To have your name printed in the program reservation must be in early.

Ira Milton Jones, Pres.
World War I Overseas Flyers
P. O. Box 2016
Milwaukee, Wis. 53201

WW II Glider Pilots

The National World War II Glider Pilots Association will hold a reunion in Milwaukee, Wis., Sept. 25-27, at the Ramada Inn - Airport. Contact

Mrs. Ginny Randolph
Reunion Secretary
136 W. Main St.
Freehold, N. J. 07728

Class 41-G

The 34th West Coast reunion of Class 41-G will be held September 24-28, at the Valley Ho Hotel, Scottsdale, Ariz. Contact

Henry G. Newman
1586 8th St.
Douglas, Ariz. 85607

48th Fighter Sqdn.

The 48th Fighter Sqdn. of the 14th Fighter Group (WW II) is planning a reunion in Anaheim, Calif., September 13-14. Contact

Carl Gardner
P. O. Box 122
Bonsall, Calif. 92003

Crew #827

The crew of #827, 730th Squadron, 452d Bomb Group, 8th Air Force, are anxious to contact their pilot, H. C. Bauer, for a reunion September 8, in Colorado Springs. Please contact

Kenneth R. Berkheimer
14976 Valleyheart Dr.
Sherman Oaks, Calif. 91403
Phone: (213) 784-3747

SCIENCE/SCOPE

How technology can offset inflation is illustrated by the 25-year record of missile manufacturing at the Hughes Tucson plant. In the early 1950's, the U.S. Air Force air-to-air Falcon -- most advanced of its day -- cost about \$100 per pound. Today, Hughes/Tucson delivers about 16 tons of U.S. Army anti-tank TOW, U.S. Navy air-to-air Phoenix, and U.S. Air Force air-to-ground Maverick missiles each day at an average cost of less than \$50 per pound. In fact, Maverick -- which seeks out its targets with a tiny nose-mounted television camera -- costs just pennies more than \$25 per pound.

TOW missile anti-tank systems will be installed on two Italian Army Agusta 109 helicopters for experimental purposes and evaluated during 1976. Italy was first in Europe to evaluate the wire-guided missile as an infantry weapon. More than 20 countries around the world have adopted TOW. In recent test firings of an extended-range version, helicopter-launched TOWs scored hits at ranges of 3,500 to 3,750 meters.

A radar mapper instrument for NASA's Pioneer-Venus Orbiter and multi-probe spacecraft will be designed and developed by Hughes. The radar will have bistatic reflection and passive radiometry operating modes in addition to its basic altimetry and imaging modes. The altimetry mode will determine the shape of Venus and its major topography by measuring surface heights to an accuracy of 50 meters. The imaging mode will produce photo-like maps with sufficient resolution to show large features. The system operates near 2 GHz, consumes less than 25 watts, and requires only one-third cubic foot of space. Hughes is also prime contractor for the Pioneer-Venus spacecraft.

The first East Coast Phoenix missile firings by U.S. Navy F-14A Tomcat squadrons were completed recently over Eglin AFB test range. On the first day, three AIM-54 Phoenix missiles were fired successfully (one equipped with warhead destroyed a BOMARC target drone). On the second and third days, five drones were destroyed when six Phoenix and seven other missiles passed within lethal range or scored direct hits.

From the launching of Early Bird 10 years ago to the six Intelsat IV satellites that now encircle the world, transoceanic telephone calls have increased from three million to more than 50 million. In the same period, the cost of a call from the U.S. to Europe has been cut in half. Hughes built both Early Bird, world's first commercial synchronous communications satellite, and the Intelsat IVs for Comsat Corporation, manager of services for the 89-nation International Telecommunications Satellite Organization.

To handle the 200 million transoceanic calls forecast for 1980, Hughes is now building a new series of satellites -- the Intelsat IV-As -- which will have nearly double the capacity of the present Intelsat IVs.

Creating a new world with electronics

HUGHES
HUGHES AIRCRAFT COMPANY

Wanted: Sponsors for SEA Refugees

BY ED GATES

THE USAF, standing foursquare behind the government's program to resettle more than 130,000 Indochinese refugees in this country, has urged its membership and units to sponsor families and individuals. Though too early for an official count, at press time several had indicated they were doing just that. And a telephone center in the Pentagon, established to provide the USAF community speedy information on how to proceed with sponsorship, reported it was receiving more than fifty phone inquiries daily. That was just four days after the information center went into operation in mid-June.

"We expect the calls to increase to more than 100 per day, once the word of our setup is spread around," Brig. Gen. John H. Huston told AIR FORCE Magazine. Huston, a Naval Academy professor who holds the Mobilization Assignee slot of Assistant to the Deputy Chief of Staff/Personnel, Hq. USAF, was instrumental in establishing USAF's section of the Joint (USAF/Army) Refugee Information Clearing Office. The Navy has a separate information section elsewhere in the Pentagon.

Other USAF Reservists pulling summer tours at the Pentagon are manning a half dozen phones in the Air Force section. It's the place to contact first—the "clearinghouse"—to get the ball rolling on sponsorship.

One Air Force captain, a recent widower, needing a couple to help care for his two small children, was an early caller. The information office answered his general questions about obligations of sponsorship,

then put him in touch with the proper voluntary agency at one of the four Stateside refugee reception camps, with which he'd stay in contact to work out sponsorship arrangements.

Other callers ask if certain former Vietnamese friends and associates are among the refugees. The information unit, plugged into the State Department's Computer Center data bank, makes such identifications, provides the refugee camp location, and otherwise assists potential sponsors toward their objective.

The Center also has a printout of the names of 2,100 refugees who, on arriving at Stateside reception centers, identified themselves as former South Vietnamese military members. This roster, invaluable for potential sponsors searching for former Vietnamese comrades in arms, contains identification numbers (vital because of the similarity of names), marital status, military job speciality, religion, and other information.

Official US government estimates place the number of refugees who were in the Vietnamese forces at three percent of the refugee total. On the basis of 130,000 refugees, the military total should be about 3,900. A possible explanation of the discrepancy—2,100 vs. 3,900—is that many, for reasons of their own, declined to disclose their former military affiliation.

In any event, Air Force "is taking a broad approach by fostering sponsorship for civilian refugees as well as former service people," according to Lt. Col. John D. Little, an associate of General Huston's.

Telephone numbers for the Air Force information office are: Autovon: 227-5143, 4, 5; commercial: (AC 202) 697-5143, 4, 5.

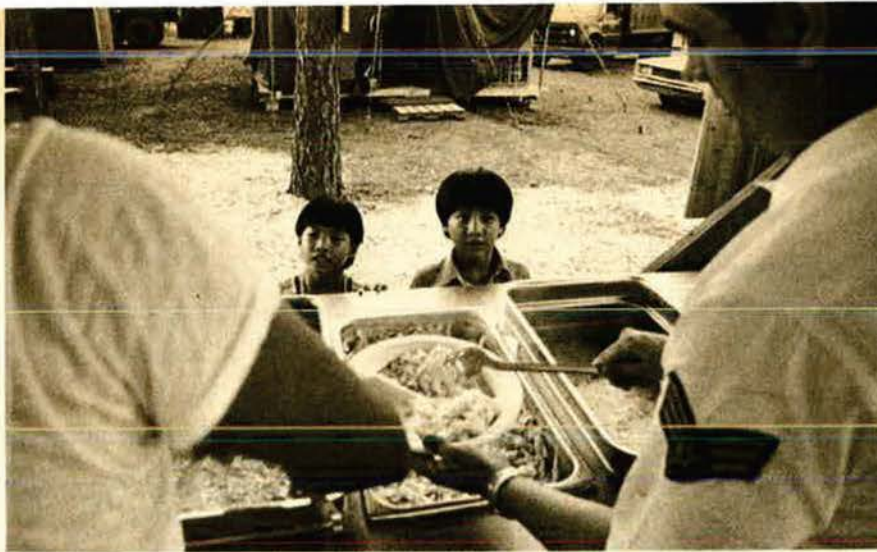
In late June more than 131,000 refugees were in or had passed through the government's Project New Arrivals processing system. This included some 33,000 still at US Pacific bases and the following at the four Stateside reception centers: Fort Chaffee, Ark., 22,500; Camp Pendleton, Calif., 17,150; Fort Indiantown Gap, Pa., 14,500; and Eglin AFB, Fla., 4,000.

The number who had completed processing and begun their integration into US society had reached nearly 40,000. The average daily entrance figure was about 900, though the government hoped to increase this sharply.

Nearly half the refugees are teenagers and children under twelve, thirty percent are young adults, seventeen percent are middle aged, and three percent are elderly. Among heads of households, according to one sampling survey, thirty percent are professionals or businessmen, and an equal number listed themselves as skilled or clerical workers. Fourteen percent of the heads of households are "housewives," and ten percent are students.

Julia Taft, an Assistant Secretary of Health, Education and Welfare, is on loan to the State Department as head of the government's overall refugee effort.

Nine voluntary agencies play a major role in securing sponsors and achieving resettlement, though some of the newcomers have independent means or relatives in this country, or former employers have offered employment. In such cases, the persons usually are released promptly from the



USAF cooks serve two Vietnamese children at the Eglin AFB reception center in Florida, where some 4,000 refugees are housed while awaiting sponsors.

reception centers without voluntary agency assistance.

Two all-commands messages in early June triggered USAF's formal participation in the help-the-refugee drive. "Many Air Force members have former Indochinese friends and associates. Some have made offers of assistance. It is believed that many more, both military and civilian personnel, may desire to assist in the resettlement effort," Chief of Staff Gen. David C. Jones said.

He added that organizations, such as "wives clubs or Air Force units can collectively" sponsor refugee families "to broaden the base for sponsorship while providing a sense of accomplishment in support of a worthy national goal."

The messages noted that sponsorship, though not a formal legal commitment, involves a "moral commitment to help the refugee to the best of [the sponsor's] ability." This includes receiving the refugee and his family and providing shelter and food until they become self-sufficient (though shelter need not be in the sponsor's residence). Sponsors also agree to provide clothing and pocket money, and help in finding employment and school enrollment for the children. The sponsor is responsible for ordinary medical costs or medical insurance.

Once the refugee finds a job, his sponsor is expected to help him locate permanent housing, acquire some furniture, and arrange for utilities.

While military members are urged to lend a helping hand, the military establishment has acknowledged that it cannot make concessions on enlistments, shopping in commissaries, etc.

Refugees who have resident alien status and who can meet regular US enlistment requirements are eligible for enlistment, but few are likely to make it. Commissions have been ruled out completely, officials noting that it would be incompatible with the heavy RIFs and long delays in call-ups of newly commissioned US officers currently plaguing the Air Force and Army.

Refugees cannot shop at commissaries, but Hq. USAF did tell the field that regular patrons could serve food purchased in commissaries to refugee guests. Headquarters said base

commanders could issue "a letter of authorization" to let refugees enter base exchanges when accompanied by their sponsor (this does not apply to civilian employee sponsors, but does to retired military). Any regular BX patron can buy exchange items intended as "bona fide gifts" for refugees.

Sponsored refugees can go to base movie theaters and use clubs and other morale and recreation facilities only when in the company of their sponsors. Base family services offices can loan "lending closet" items to sponsors for refugee use.

USAF officials hope to close their Pentagon information refugee center by early fall. The time for "going out of business," of course, depends on the extent of the response from the USAF membership.

If the example of Col. David A. Odell proves typical, it shouldn't take long. Colonel Odell, who retired last September and now lives in Venice, Fla., told AIR FORCE Magazine:

"I am sponsoring my counterpart, former Tan Son Nhut Air Base Wing Commander Col. Nguyen Trung Son, and his wife and three kids. Also helping a couple of VNAF fighter jocks and trying to find help for others, including a Cambodian captain who saved the life of one of my best fighter pilots. . . ." ■

AFA PRESIDENT SHOSID URGES SUPPORT

In a memorandum to all AFA units, President Joe L. Shosid has urged support of the refugee resettlement program by AFA Chapters and individual members. The memo cited this article and stated that arrangements had been made to contact directly the Air Force office in the Pentagon for additional information. Those telephone numbers, again, are:

Commercial: (202) 697-5143, 4, 5
Autovon: 227-5143, 4, 5

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

Washington, D. C., July 8
USAF's Lt. Gen. Daniel "Chappie" James, Jr., has been nominated to become general, the first black to attain four-star rank in the armed forces.

General James, fifty-five, will be assigned as Commander in Chief of the North American Air Defense Command (NORAD) and Commander of the Aerospace Defense Command (ADC).

A fighter pilot in World War II, General James also flew 101 combat missions in Korea, and in Southeast Asia he was Vice Commander of the 8th Tactical Fighter Wing.

Born in Pensacola, Fla., General James attended Tuskegee Institute.

Previously, General James served as Deputy Assistant Secretary of Defense for Public Affairs, and since 1974 has been Vice Commander of the Military Airlift Command (MAC), Scott AFB, Ill.



Many who served there will remember the lush climate of the tropics; the towering cumulus in blue sky or the socked-in solid overcast; the immense flight line that engendered an air of purpose,

GEN. WILLIAM V. McBRIDE NAMED VICE CHIEF OF STAFF

The Air Force announced on July 9 the appointment of Gen. William V. McBride as Vice Chief of Staff, US Air Force, effective September 1. On the same day, Gen. Richard H. Ellis, who has served as Vice Chief since November 1973, will take command of US Air Forces in Europe, replacing retiring Gen. John W. Vogt. General McBride has been Commander, Air Force Logistics Command, since September 1974. Prior to that, he served as Commander of Air Training Command and as Vice Commander in Chief, USAFE. (For other senior staff changes, see p. 80.)

permanence, and high performance.

At the height of its activities, Ubon Royal Thai AFB, Thailand, was known as home to the 8th Tac Fighter Wing—an outfit once recognized by comedian Bob Hope as "the world's largest distributor of MiG parts."

Famous men, aircraft, and units resided at Ubon, and during fourteen years of air operations filled a lot of pages of Air Force history.

Before the end of 1968, USAF pilots flying out of Ubon had destroyed 38½ MiGs, the highest tally of any fighter wing in Southeast Asia.

The 8th and its aircraft pulled out of Ubon last fall. On June 26, just past, during a brief outdoor ceremony attended by American and Thai officials, the Stars and Stripes was lowered for the last time by personnel of the 6233d Air Base Squadron, the last unit to leave.

The end of an era.



With USAF units withdrawing from Thailand, a number of CONUS realignments have been announced. (By about June 30, some 7,500 military personnel and 140 aircraft had departed Thailand.)

—White House photo



Installations affected include the Eglin AFB, Fla., complex; Patrick AFB, Fla.; George AFB, Calif.; Nellis AFB, Nev.; and Moody AFB, Ga.

At Eglin, twenty-one O-2A and sixteen OV-10 aircraft assigned to the 549th Tactical Air Support Training Squadron, Eglin Auxiliary Airfield #9 (Hurlburt Field) will transfer to Patrick by next fall. A Reserve unit at Eglin Auxiliary Airfield #3 will convert from eight C-130s to ten AC-130s. The 33d TFW at Eglin will add twelve F-4Es.

Patrick will also be assigned the 2d Mobile Communications Group from Europe.

George AFB will get from Nellis the assets of the 66th FWS: eight F-105s and six F-4C Wild Weasels. George's 434th TFS will convert from F-4Es to F-4Cs.

Nellis will also lose the twelve remaining A-7s to other A-7 units. The base will activate a Dissimilar Air Combat Training Squadron, equipped with F-5E aircraft.

Student pilot training assets at Moody will be distributed to other training bases. Base host responsibilities will be transferred to TAC while also activating a tac fighter wing with F-4s.



Ozone, the layer of supercharged oxygen that keeps the sun's harmful ultraviolet rays from directly bombarding earth, has created much concern of late.

An alarm has been sounded in the scientific community that substances used in spray-can products and other pollutants may be destroying the ozone shield. The effects on humankind could be far-reaching and disastrous. Increases in skin cancer, crop failures, and

AFA President Joe Shosid presents an AFA Life Membership to President Ford at White House ceremonies on June 19. President Ford, a Navy veteran, has been a strong supporter of the armed forces for many years.

severe weather changes have been noted among the potential hazards.

NASA has initiated a program to systematically study the ozone shield and take a reading on its well being.

A Nimbus-F spacecraft was launched in June that will, among other things, measure on a global scale the amount of solar radiation received by earth. Such data have never before been available to scientists. Nimbus-F's Limb Radiance Inversion Radiometer will gauge the density of ozone distribution in the atmosphere, for use as a baseline against future readings.

Built for NASA by a GE division, the vehicle will also monitor sixty-two channels in the electromagnetic spectrum as part of the environmental satellite program begun with the launch of the first Nimbus satellite in 1964. (Nimbus is also part of the international Global Atmospheric Research Program, aimed at better weather prediction.)

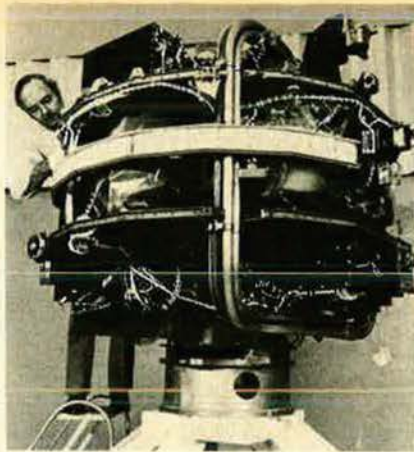
And, in November, NASA plans to orbit Atmosphere Explorer-E, bearer of a new sensor to help in the investigation of the effect of pollutants on the ozone level. Aside from its other experiments, the spacecraft will be equipped with a propulsion system to alter its orbit, thereby making possible ozone readings at various locations at different times each day. These data will be beamed back to earth, processed by computers, and distributed in almost real time to scientists at research centers and universities around the US, said RCA, which developed the satellite for NASA.



In early July, Dr. Wernher von Braun announced the formation of the National Space Institute. He will serve as its first President.

The institute, a nonprofit, educational and scientific organization, will be dedicated to communicating the benefits of our space program to the public, he said, as well as providing a forum for the discussion of space policy, thus giving Americans a voice in directing space endeavors. "Properly directed and supported, the space projects planned for the future can be designed to help resolve many of our pressing energy, food, environmental, and economic problems," Dr. von Braun commented.

The institute's board of governors is a national cross-section—individuals from all fields: science, the arts, government, the press, business, law, medicine, and others, including an Astronauts Council.



Final touches prior to upcoming launch of Atmosphere Explorer-E.

Objectives outlined for the institute:

- Special-interest education—to develop data for such special inter-

ests as meteorology, health, and agriculture.

- Applications research—to demonstrate possible adaptations of space technology in such fields as energy, the environment, natural resources, and food production.

- Membership—to help stimulate space enthusiasts and elicit their response to key issues in new space programs.

- Communications—to present the benefits of space programs to the media.

- Academic education—to prepare comprehensive educational programs for high schools and universities.

The institute's educational programs will be sponsored by public membership donations and grants.



In a related matter, NASA recently dedicated its newly expanded Sci-

Soviet News and Notes

Brezhnev Becomes a Four-Star General

Détente, along with the Strategic Arms Limitation Talks and negotiations for Mutual and Balanced Force Reductions in Europe, is believed by many to signify Soviet abandonment—or at least reduction—of emphasis on military might as an instrument of policy. "The Soviet civilian hierarchy has the military under control."

Those who believe that ignore the continued expansion of Soviet military forces. They may also have failed to note a recent Soviet announcement of parallel significance. The "civilian" General Secretary of the Central Committee of the Communist Party of the Soviet Union, Leonid I. Brezhnev, has been promoted to the rank of General of the Army.

Brezhnev's promotion was first announced to the West in an indirect fashion. Marshal A. A. Grechko, Soviet Minister of Defense, speaking on April 17, 1975, at a scientific conference, relayed greetings from "General of the Army Brezhnev." Shortly thereafter, on May 8, Soviet President Nikolai V. Podgornyy presented Brezhnev with a "Marshal's Star," worn only by marshals and four-star generals.

General Secretary Brezhnev, a political officer in World War II, ended up as a one-star general major. He again donned his uniform in March 1953 to head the Political Administration of the Soviet Navy, holding that position for a year with two-star rank as a general lieutenant.

The last published picture of Brezhnev in uniform was taken on February 22, 1963, on the forty-fifth anniversary of the Soviet Armed Forces. At that event, General Lieutenant Nikita S. Khrushchev and General Lieutenant Leonid I. Brezhnev flanked the then-Minister of Defense, Marshal of the Soviet Union Rodion Ya. Malinovskiy on the stage of the Kremlin's Palace of Congresses. (This observer was present when the photograph was taken.) Since only promotions to four-star rank are published in the Soviet press, it is not known when Brezhnev was awarded the three-star rank of general colonel.

Joseph Stalin held the rank of Generalissimus of the Soviet Union, the only man to be awarded that status. The USSR's former leader, Nikita Khrushchev, was not advanced beyond two-star rank. Now, in this period of détente, the "civilian" head of the Communist Party, and the most powerful man in the Soviet Union, has been promoted to General of the Army.

—Harriet Fast Scott

Aerospace World

entific and Technical Information Facility, Linthicum Heights, Md., billed as "one of the largest and most comprehensive technical data banks in the world." And with good reason.

The facility is the central depository for more than fifteen years of space and aeronautical research—some 1.2 million items of aerospace-derived information. Increasing by 80,000 items annually, this data reservoir last year alone reported new technical developments to some 20,000 organizations and persons, as well as conducting 10,000 individual searches via its computerized data-retrieval system.

The facility will now also have access to the vast data banks maintained by DoD and the Energy Research and Development Administration, principal successor to the Atomic Energy Commission. The facility has a staff of 230, including researchers, librarians, and computer experts.



NASA and the Energy Research and Development Administration have formally agreed to become allies on the national energy research and development front.

A management team from both organizations will "identify specific program tasks that can be undertaken by the NASA centers in support of ERDA programs," officials said.

ERDA also is hoping to tap into the country's most capable scientific, engineering, and management resources across the spectrum of private, public, and university sectors.

Regarding NASA, three broad areas apply:

- Basic and applied research will take place at NASA centers in such fields as solar systems, gas turbines, fuel cells, hydrogen technology, ground-propulsion technology, seals, combustion, and materials and structures, among others.

- ERDA will receive NASA proposals and plans for specific technology, including testing, evaluation, and demonstration of hardware and projects.

- ERDA will rely on space-agency experts for help in managing ERDA efforts in the private sector.



On sale to fund various Bicentennial activities is this medal, honoring Paul Revere and commemorating the beginning of the Revolution. Produced by the US Mint, it is part of a philatelic-numismatic package that includes US Postal Service stamps celebrating American forces of the Revolution: Army, Navy, Marines, and Militia. They can be ordered from the American Revolution Bicentennial Admin., P. O. Box 1776G, San Francisco, Calif. 94101. Cost: \$5. Send a check or money order.

The venerable B-52 Stratofortress has entered its third decade as an operational arm of the US's strategic deterrent force.

It was in June of 1955 that USAF took possession of its first B-52, a "B" model now on display at the SAC Museum in Bellevue, Neb. The beginning was inauspicious. The aircraft—serial number 52-8711—was flown from the Boeing plant at Seattle, Wash., to Castle AFB, Calif. At climbout after takeoff, the copilot's window shattered; before the aircraft reached cruise altitude, the radar equipment went out; pres-

Associate Publishers Named

Effective July 1, Charles E. Cruze and Richard M. Skinner became Associate Publishers of AIR FORCE Magazine, to reflect more fully the management and fiscal responsibilities each has been carrying for a number of years, James H. Straubel, Publisher of the magazine, has announced. Each will retain his present publishing title—Mr. Cruze as Director of Advertising and Mr. Skinner as Managing Editor.

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surization problems kept the aircraft at the relatively low altitude of 15,000 feet.

But USAF and Boeing persisted, and the B-52 fleet, modified extensively through the years, has gone on to become the longest-serving front-line bomber force in the nation's history, including twenty years of round-the-clock alert duty and eight years of combat missions in Southeast Asia.

In January 1975, a \$200 million program was begun for the structural modification of eighty B-52Ds, which should allow the aircraft to remain on active duty well into the 1980s, serving, it is hoped, in conjunction with the upcoming force of new B-1s.



USAF is currently developing a proximity sensor dubbed "Superquick" that can distinguish between multilayered jungle foliage and the ground, thus increasing the effectiveness of attacks on targets hidden in heavy undergrowth.

The sensor—FZU-34B—is designed to provide a detonation signal between zero and three feet above ground. Able to operate over



In ceremonies this spring, the circle encompassing AU's education center, Maxwell AFB, Ala., was renamed in honor of the late Lt. Gen. Claire L. Chennault, famed Flying Tiger chief. Above: AU Commander Lt. Gen. F. Michael Rogers and Mrs. Anna Chennault, widow of the World War II leader.

any terrain, the sensor is also being designed for greater resistance to electronic interference.

A testing program, conducted in New Mexico and the Panama Canal Zone in dense jungle, is said to have produced excellent results

using inert bombs. TAC is scheduled to undertake operational testing from high-performance aircraft using live bombs and fuzes at Nellis AFB, Nev. Upon completion and evaluation of test data, a production decision is expected next year.



Belgium, Norway, the Netherlands, and Denmark have agreed to purchase General Dynamics' F-16 fighter, and yet another weapon system is seen as contributing to the long-sought standardization of NATO weaponry.

In June, US Army confirmed that Italy has joined Belgium, the UK, West Germany, and the Netherlands in purchasing the US-built Lance, a highly mobile, supersonic artillery missile capable of delivering a 1,000-pound conventional warhead.

The missile, manufactured by LTV Aerospace Corp., currently equips seven US battalions in CONUS and in Europe.



NASA's Ames Research Center, Mountain View, Calif., is currently hosting a ten-week workshop on space colonization.

Space Power Mgmt. by SEDCO

RF systems for space power management have become a major element of a modern ECM system designed for effective performance through the 1980's. Sedco has become a recognized leader in this important field. This has been achieved as a result of many years of pioneering research and development in the field of high power, broad band electronically steerable antenna systems and RF switch networks designed specifically for ECM application.

Sedco has also developed a complete line of direction-finding receive systems and processing equipment for optimum control of the transmit section of the space power management system. The hardware delivered by Sedco has been qualified for use in operational aircraft and has demonstrated excellent reliability through extended flight test programs.

AN/ALQ-117 RF SWITCH ASSEMBLY

In production since 1972, this major subsystem performs the critical antenna switching function in the ALQ-117. Sedco-developed techniques achieve low loss, high power, submicrosecond transmitter switching performance, as well as multiple beam DF receive inputs. Sedco's RF Switch Assembly is an excellent example of the application of high performance ferrite latching switchable circulators in an advanced ECM system.

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B-1 RFS/ECMS TAS/DFRS

The full scope of Sedco's systems capability is currently being applied to developing the TAS/DFRS for the B-1 aircraft RFS/ECM System. Sedco's highly developed skills in electronically-steerable Transmit Antennas (TAS), instantaneous Direction Finding antennas and Receiving Systems (DFRS), beam steering computers, and encoders are fully utilized in this program. Sedco-developed components and circuits, such as broad-band high power ferrite phasers, ridge-waveguide transmission components, RF feed networks, and log video receivers enhance the system quality and performance.

ESAS ANTENNA SYSTEM

Developed for the Air Force Aeronautical Systems Division, ESAS (Electronically Steerable Antenna System) is qualified for operational aircraft. The system is currently installed in a KC-135 aircraft, where it has undergone extended flight test evaluation for possible future applications. Some of the design and fabrication techniques used in ESAS were applied in the B-1 TAS/DFRS.



**SEDCO SYSTEMS
INC.** 130 Schmitt Blvd.,
Farmingdale, N.Y. 11735

Aerospace World

The university and government scientists gathered at Ames are exploring the practical aspects of their theories—such as engineering and social needs, as well as the all-important economics of colonizing in space.

While the problems—and costs—of creating hospitable environments in space may be staggering if not impossible at this point, some scientists believe that colonization is within the reach of current technology. Now, they say, is the time to begin assessing alternatives.

Although many of the ideas being presented sound like science fiction, they are the brain-children of some of the nation's leading scientists. Dr. Gerald K. O'Neill, Princeton University, thinks it possible to create an orbiting community—an artificial planetoid constructed perhaps from lunar or asteroidal raw materials. Aspects of this theory are being discussed.

Another study, headed by Ames's Dr. Robert MacElroy, will take a scientific look at Mars as the site of a colony. Conditions might be created on the Red Planet in which algae-like organisms could use photosynthesis and solar energy to make oxygen. Water is believed to exist there.

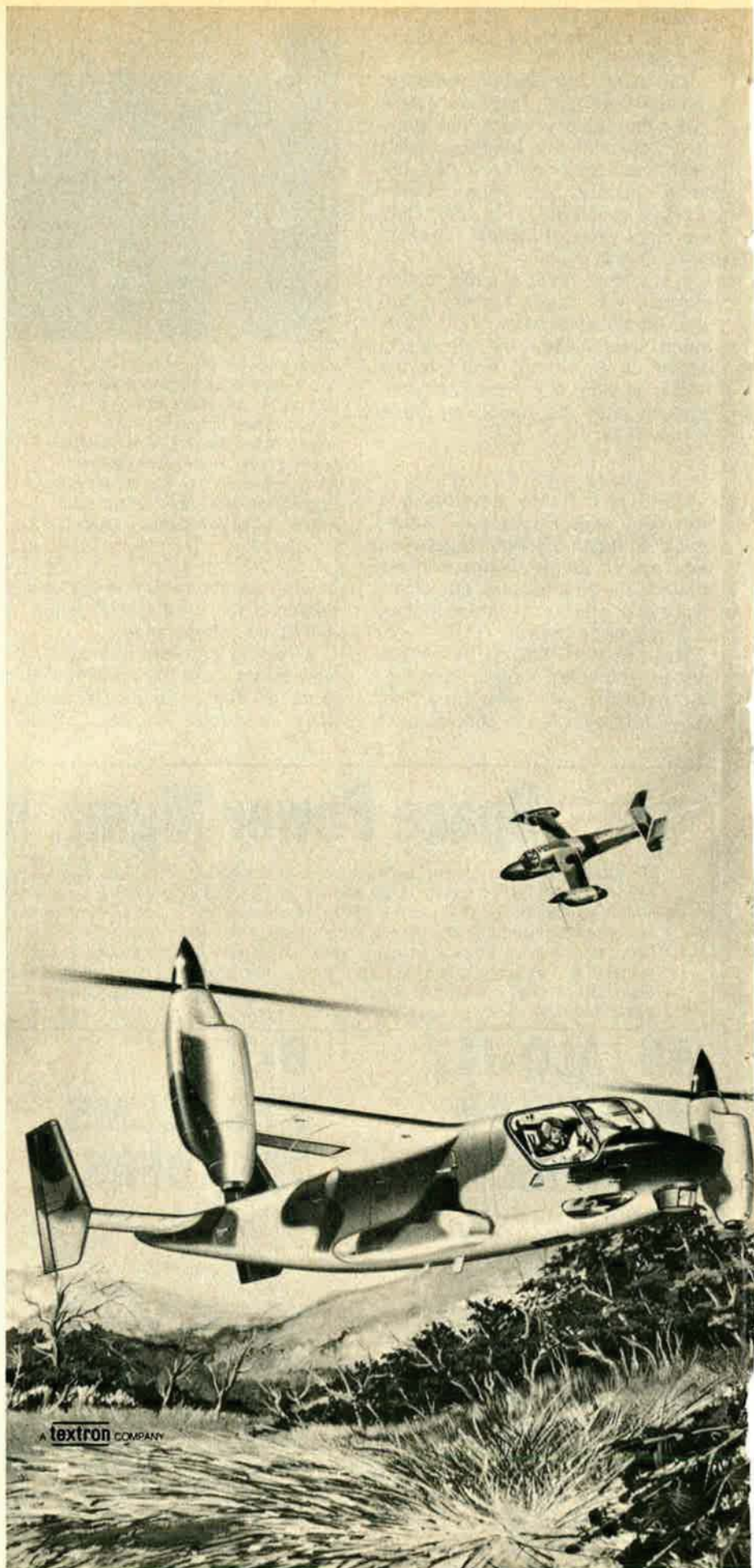
Who knows? We got to the moon, didn't we?



August has been designated as "Community College of the Air Force (CCAF) Registration Month" by Hq. USAF. Two innovations—CCAF registration procedures and curriculum format—are key features of the registration month, officials said.

The new registration form represents CCAF's continued efforts to refine and simplify registration. The new Air Force Form 968 (replacing AF Form 1033) was adopted after extensive review at Education Centers throughout the Air Force.

In addition, the College has formalized the Related General Education portion of its certificate requirements, officials cautioned. A CCAF registrant must fulfill requirements based on his technical education, physical education, management education, and general education such as natural science, math, etc.



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Bell's TiltRotor. Watch for it. Faster, more maneuverable, less detectable. There'll be nothing like it for reconnaissance missions.

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HELICOPTER

Thus, with the announcement of a more specific core curriculum outlining Related General Education requirements, a reduction in the need for special considerations and waivers is expected.

Since its inception in 1971, CCAF has continued to achieve civilian academic recognition of Air Force education programs. Initially, seventy-seven programs comprised the College's offerings. In the year ahead, CCAF will be awarding Career Education Certificates in more than 100 programs.

As of May 1975, the College had awarded 238 CECs; by mid-June, it had issued 100,000 transcripts.



NEWS NOTES—MAC's Maj. David P. Clark recently received the 1974 Aviator's Valor Award for the helicopter evacuation of an Icelandic heart-attack victim during horrendous weather conditions. An American Legion Post sponsors the annual award. Major Clark is with Det. 14, 39th ARRW, Keflavik, Iceland.

NORAD's two new **phased-array radars** to warn against sea-launched missile attack are tentatively to be located at **Otis AFB, Mass.,** and **Beale AFB, Calif.**

Eglin AFB, Fla., has been named recipient of the 1974 **Secretary of Defense Environmental Quality Award.** Cited were "pollution abatement efforts and preventive measures to curb despoilment of the natural environment."

The advanced development of **USAF's Air-Launched Cruise Missile** is continuing apace; a full-scale model was **successfully jettisoned** from a B-52 at 25,000 feet in June. Powered flights of prototypes are scheduled for next February.

Capt. Grant S. Hachmann, Randolph AFB, Tex., received the **Quesnell-Campbell Memorial Award** for "modernizing and standardizing instrument flight procedures for landing aircraft." He's with the **Instrument Flight Center.**

Effective July 1, the **Air Force Special Communications Center,** a unit of the Air Force Security Service collocated with headquarters of the AFSS at Kelly AFB, Tex., is now known as the **Air Force Electronic Warfare Center.**

Late in June, the first ignition test of the **Space Shuttle Main Engine's** main chamber was a success, thus initiating a series of progressively higher thrust tests. The first **full-scale engine test** is set for later this summer, NASA reported. ■

MIA/POW Action Report

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

New League Director Supports Bill

Earl Hopper, a retired Army colonel, has taken over as Director of the National League of Families of American Prisoners and Missing in Southeast Asia. He will serve a one-year term, as did his predecessor, E. C. "Bus" Mills.

Colonel Hopper's Air Force captain son, Earl, Jr., was shot down and went missing in action near the Laos/North Vietnam border in January 1968. The other aircrewman in the stricken F-4 Phantom—Maj. Keith Hall—punched out successfully, was captured, and ultimately came home in the 1973 repatriation.

The new and former League Directors strongly support H.R. 335, a House of Representatives bill that would establish a select committee charged with trying to discover the fate of the more than 900 American

servicemen still listed MIA in SEA, and the remains of about 400 others already declared killed in action.

Even though the bill has the endorsement of 255 of the 435 House members, the House Rules Committee will not consider it for debate. Committee Chairman Ray J. Madden (D-Ind.) has inferred in correspondence with the League his belief that the Pentagon is undertaking whatever steps are possible to resolve the MIA/KIA situation.

The Defense Department's Joint Casualty Resolution Center, set up in Thailand following the "cease-fire" in South Vietnam, has had a frustrating time of it. It has been stymied by the continued fighting in Laos, Cambodia, and finally, the fall of South Vietnam. The Center took casualties of its own in December 1973, when an unarmed helicopter search team was ambushed and one American was killed.

For its part, North Vietnam in early June said that it would permit no additional searches unless the US provided postwar aid for both North and South Vietnam, a position that has been termed blatant blackmail by US officials. Although such assistance is called for under the Paris agreement, Secretary of State Henry Kissinger and other US officials have repeatedly stated that the US obligation ended once it was clear that North Vietnam had no intention of living up to the agreement.

Thus, the SEA accounting stalemate continues to drag on.

On Behalf of MIA/POW Children

An annual \$10,000 scholarship for children of Vietnam MIA/POWs has been established by the president of a New York-based company.

The scholarship program will continue until all offspring of the MIA/POWs have passed college age, in about 1995, said J. Kevin Murphy, Purolator Services, Inc., of Lake Success, N. Y. Each year's scholarship will provide the recipient \$2,500 annually for four years, Mr. Murphy said.

The scholarship will be presented in honor of a different MIA/POW each year, with the 1975 award named for Rear Adm. James D. Stockdale, the senior Navy POW, held seven years in North Vietnam.

Winners of the scholarship will be selected on the basis of standard aptitude tests available throughout the country. The eligibility of high school senior competitors will be verified by the military services, Mr. Murphy said. The student's need will be a factor in selection.

Mr. Murphy and his company have been involved in MIA/POW scholarship programs since 1970. He headed a committee that urged state legislatures to pass bills providing free tuition at state-supported institutions of higher learning for MIA/POW children. Through the committee's work, forty-three states approved such scholarship assistance. ■



Guest speaker at a meeting of AFA's L. G. Hanscom Chapter, Lexington, Mass., was Col. Ronald E. Byrne, Jr., a prisoner of the North Vietnamese for seven and a half years. Now Assistant Deputy for Control and Communications Systems at Hanscom AFB, the veteran of the Korean and Vietnam Wars kept his audience spellbound in relating his experiences as a POW.

The Apollo Soyuz Spaceflight Commemorative

History's first international manned spaceflight
commemorated in a high relief art medal



Marcel Jovine
Sculptor



2½" Medal
Shown Actual Size

This July, the people of the world will witness one of the most extraordinary events in the history of man's fascination with space.

For the two most technologically advanced nations of the world, the United States and the Soviet Union, are cooperating in the first international manned spaceflight—a momentous venture of lasting scientific and diplomatic importance.

The mission is the *Apollo Soyuz Test Project* (ASTP). On July 15, the Soviet spacecraft Soyuz and the U.S. spacecraft Apollo will be thrust into earth orbit. Within two days, as the world watches via color television, the Apollo is scheduled to rendezvous and link up with the Soyuz in history's first manned space docking of two crafts from two nations.

During the 40 or more hours that the space crafts are joined, the two crews—three American astronauts and two Russian cosmonauts—will enter each others' modules, exchange gifts, and conduct some two dozen joint scientific experiments. *And during those same hours, back on earth, the Medallion Art Company will be striking a permanent medallion record of this unprecedented event.*

AN AUTHENTICALLY DETAILED, HIGH RELIEF ART MEDAL COMMEMORATING HISTORY'S FIRST INTERNATIONAL SPACE EFFORT

As an enduring artistic summation of the mission, this high relief fine art medal has been designed to honor *both* of the cooperating nations. Officially, the medal has no designated obverse or reverse, as each side carries equal weight and importance.

On the American side, in the foreground, is a highly detailed portrait of the Apollo shown at the instant before docking with the Soyuz. The southeastern United States and the site of the Apollo launch from the Kennedy Space Center are shown, with the legend "Apollo Soyuz" and the names of the three astronauts and two cosmonauts in English.

The Russian side of the medal shows the Soyuz in the foreground, and includes a view of the Soviet Union with the Soviet Soyuz launch site at Tyuratam. The legend appears in Cyrillic characters.

The background for both sides is a view of space modeled from a painting commissioned by NASA. Both sides also depict the official emblem of the flight at top center. Around the edge of the medal will be impressed the pertinent data of the mission—dates of lift-off, docking and recovery—to form a permanent Flight Log.

Noted sculptor Marcel Jovine was chosen to create this medal because of his unusual talent for combining technical accuracy, realism, and superb artistry. His original sculpture is a dramatic portrait that capsulizes the very essence of this mission. In a deeper sense, Jovine's design also evokes a renewed sense of man's courage and brilliance in the awesome sphere of space exploration. The Jovine monogram appears on the American side and his name in Russian is on the other side of the medal.

GOLD, SILVER AND BRONZE EDITIONS AVAILABLE

Because of the importance of this event, Medallion Art Company is striking this medal as a rare *corporate issue*, in three editions:

- 18-Karat Gold, 1½" diameter, high relief. Limited edition of 500. \$400.
- Antique Silver, 2½" diameter, high relief. Limited edition of 5,000. \$ 75.
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This unprecedented journey into space is history in the making. The major objective of the flight is to test the jointly designed docking mechanism, equipment, and techniques for international crew rescue capability in space. But the true importance of the mission lies in the fact that it is an effort of cooperation between the world's two leading space powers. An effort that can, indeed, be a giant step toward the goal of world peace through an international sharing of knowledge, resources, and capabilities.

As one of the highest relief, most detailed, and most beautiful commemoratives of an epic event, this fine art medal is certain to be in demand by historians, space enthusiasts, and members of the armed forces and aeronautical community, as well as by collectors around the world.

Certainly, it is a meaningful keepsake for future generations, with substantial appreciation potential—especially in the extremely limited precious metal editions. Whether as a choice addition to your own collection, as a gift, or as an investment, you are urged to act quickly if you wish to acquire it. Please fill in and mail the order form below.

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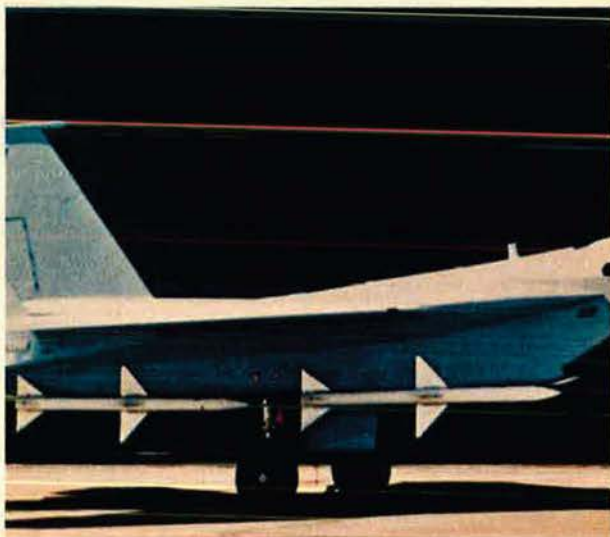


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Airpower in the News

By Claude Witze

SENIOR EDITOR, AIR FORCE MAGAZINE

Protect Your Own Hide

Washington, D. C., July 8

Sen. John Stennis, the venerable and respected chairman of the Armed Services Committee, was presiding at a hearing last month, wherein the subject of US "commitments" was brought up repeatedly. The witnesses were Secretary of Defense James R. Schlesinger; Gen. George S. Brown, USAF, Chairman of the Joint Chiefs of Staff; and George S. Vest, director of the Bureau of Politico-Military Affairs of the Department of State. The subject: "Disapproving Construction Projects on the Island of Diego Garcia."

A persistent question put to the guests by critical senators had to do with the requirement. What obligations do we have that necessitate construction and maintenance of an American military logistics station in the Indian Ocean? It was apparent that Chairman Stennis was irritated by the suggestion that since there is no immediate requirement in 1975, the project is a military boondoggle.

"What commitments would be hindered if the Congress were not to take this action?" asked one senator.

Another said an expansion at Diego Garcia will "make it easier to get in the Indian Ocean, easier to float around there, and easier to get into trouble."

A third committee member made disparaging remarks about building a base on a little rock in the ocean.

The chairman waited until the hearing was nearly over, but he could not suppress a response.

"I learned rather early in life that you have a commitment to yourself to protect your own hide, and look ahead and prepare to do it," Mr. Stennis declared. "I think nations better follow the same rules."

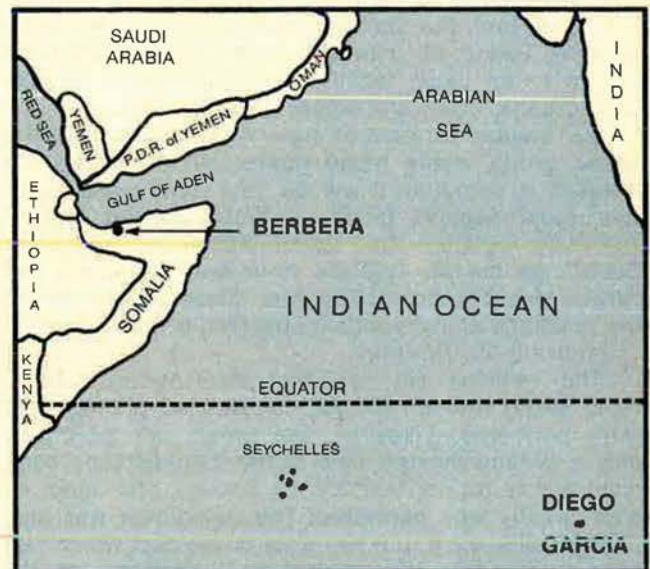
He recalled his first trip to Europe as a member of the Senate. He talked with an official of a Scandinavian country who warned that when European nations were forced out of the Pacific they left a void and that if Communists tried to fill it, Americans would have to defend it. Then came Korea and Vietnam. The parallel was obvious. Great Britain no longer rules the Indian Ocean, and Soviet Russia is moving in, hard and fast. Commented Mr. Stennis: "I just feel like it is clear that we ought to be somewhere around in that area of the world with some force in order not to have an empty gasoline tank."

There was some discussion about the true importance of the Indian Ocean and its adjacent waters—the Red Sea and Persian Gulf—as pipelines. The experts say Russia has a primary interest in being able to deny oil to the West. The Soviets encouraged the Arab embargo in 1973 and could cripple NATO naval activity in the Mediterranean and Indian Ocean at a time of crisis. In cross-examination, Secretary Schlesinger was asked what motivates the Russians to build up their strength in the Indian Ocean area. His reply was cautious:

"Under the heading of speculation, one can talk

about the warm-water drive of the czars back to the time of Peter the Great. Or one may say that the Soviets have now become a global naval power . . . or one may suggest that they prefer to be astride the oil lines of communication with the implicit threat that holds. . . ."

Basically, what Mr. Schlesinger and General Brown came to report is a fast-moving buildup of Russian capability at Berbera, in Somalia (see map). Berbera is a small port overlooking the entrance to the Red Sea. In 1969, the Soviets finished building a harbor



The map shows the locations of Diego Garcia, in the Indian Ocean, and Berbera, on the Somali coast. Somalia is made up of former British and Italian colonies. It's about the size of the state of Texas.

there, and by 1971 sixteen of their naval vessels had used it. In 1972, a new agreement was signed, and immediately Moscow installed a naval communications station and moored a barracks ship and a repair ship that have been there ever since. Since late 1973, they have installed a missile storage and handling facility. This was followed last summer by a new treaty of friendship, further naval activity, and a continued buildup. Petroleum (POL) storage has been expanded, permanent housing constructed, and work is under way on an airstrip that will be nearly 15,000 feet long. The number of Soviet ships operating in the Indian Ocean now runs between fifteen and twenty, half of them classified as combatant. The United States has a communications station on Diego Garcia and keeps a small task force in the Indian Ocean about one-third of the year. The balance of power there, the Defense Department says, is shifting.

To support its case, the Pentagon has released nine

Airpower In the News

reconnaissance photos, some of which are reproduced on these pages. They were taken by aircraft; there are other pictures, still classified, that were taken from space. They provide even more detailed proof, according to reliable military sources, of the Russian effort at Berbera.

The reaction of Somalia to these revelations is a categorical denial by the Somali Ambassador, Dr. Abdullahi A. Addou, that there is "a Soviet base in Berbera or elsewhere in Somalia." The photographs indicate otherwise. What they show, according to US intelligence experts, are facilities and construction common to Russian installations elsewhere in the world. Further, the improved Berbera seaport is designed for vessels up to 12,000 tons. The Somali navy consists of ten torpedo boats manned by 300 men. Somalia itself has no use for a 15,000-foot runway or a broadcasting facility aimed at Moscow.

In response to an invitation from Dr. Addou, delegations from both the Senate and the House have visited Berbera, taking off with a promise they would have access to all these facilities and permission to take photographs. They are home, disappointed.

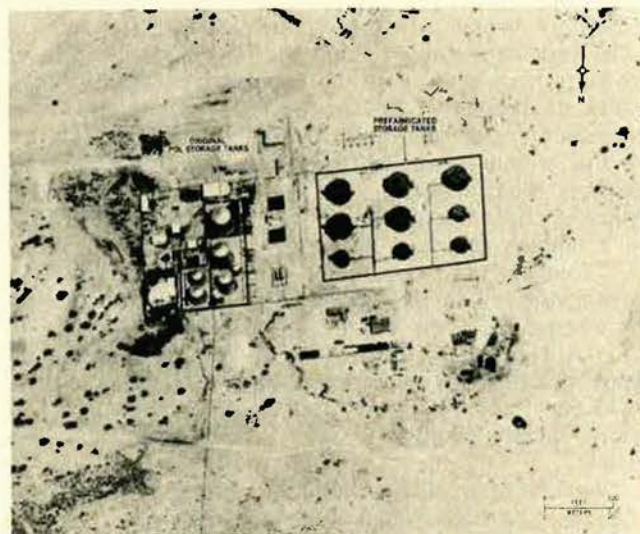
Rep. Samuel Stratton of New York, chairman of the House group, came home convinced that when the complex is complete it will be "the most comprehensive naval support facility available to the Soviets anywhere outside the Soviet homeland, including Cuba." As for Dr. Addou's promises, they were not carried out. The delegation was refused admission to the buildings and grounds it specifically asked to visit.

Reported Mr. Stratton:

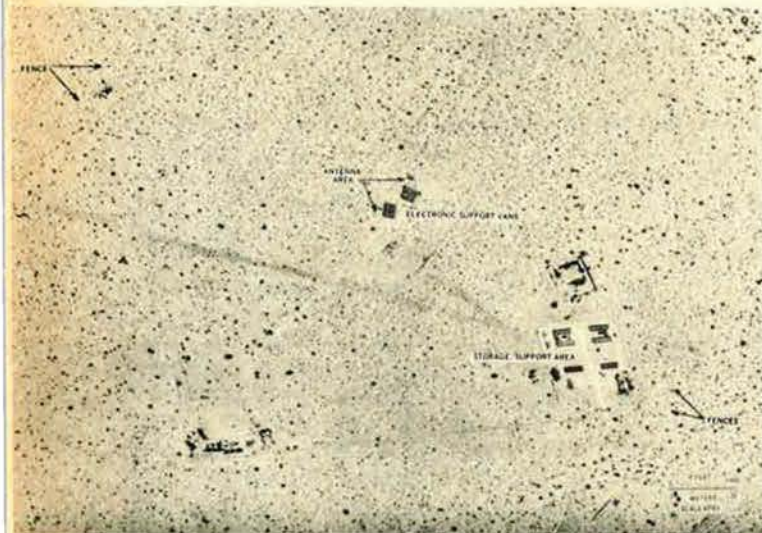
"The vehicles did not even stop during a brief, rapid swing through the facility, and no photographs were permitted. Likewise, the group was permitted only a distant, moving view of the long-distance communications facility built by the Soviets, and again no photography was permitted. The delegation was also refused all access to a key area of the port which had been featured in the original DoD briefings, on the



When this photo of the Berbera port facility was taken, Soviet naval vessels that use the port were at sea, participating in Exercise OKEAN.



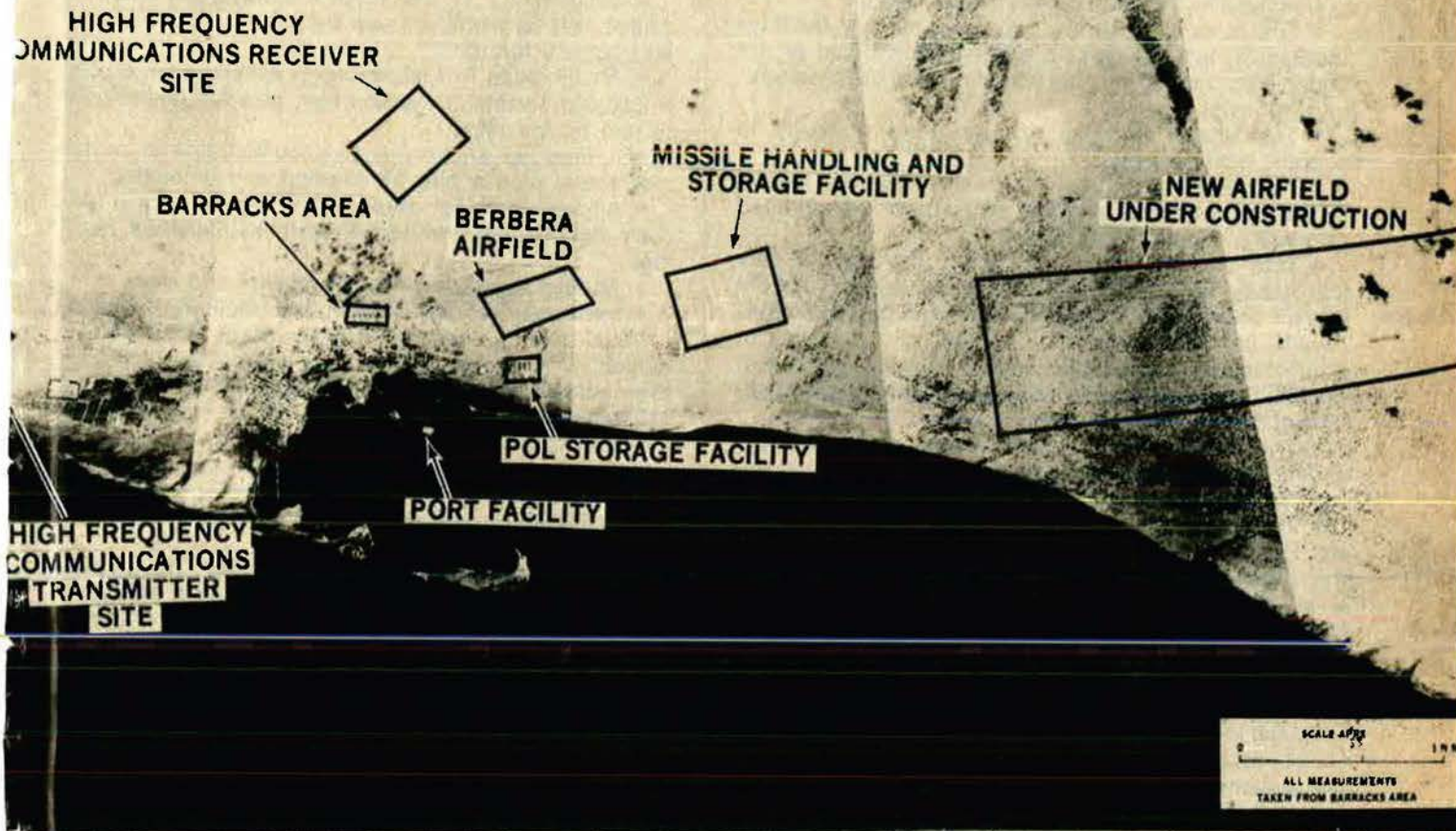
Recently, POL storage capacity at Berbera has been more than quadrupled to 170,000 barrels. There is a pipeline leading to the harbor.



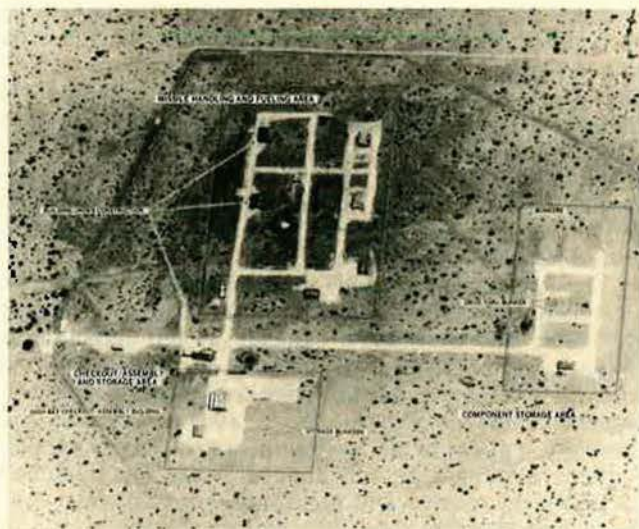
Within the communications receiver site is an air-conditioned, secure facility that probably is used for encoding and decoding messages.



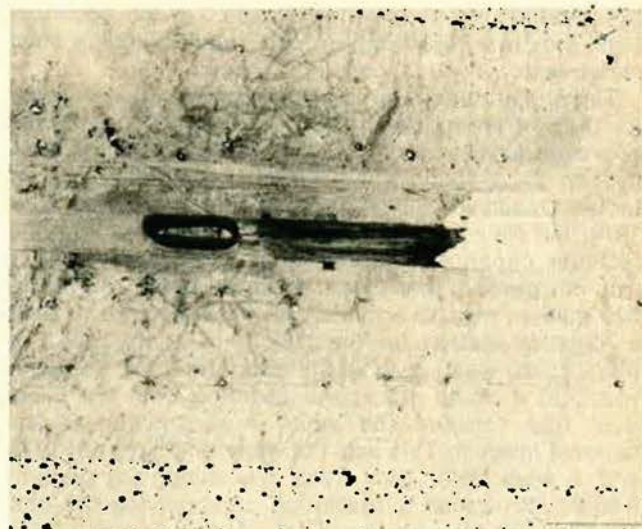
The barracks and trailers shown here can house about 1,250 people in addition to accommodations for 300 in the barracks ship (top photo).



This composite photo of the Soviet facility at Berbera was made from strips taken during a high-altitude reconnaissance mission flown in late April 1975. The port facility, measuring about one by two miles, can handle ships with a draft of from thirty to sixty feet. Not discernible in the photo is a temporary sand landing strip that lies between the POL tanks and the communications receiver site. The facility, begun in 1969 and greatly expanded during the past eighteen months, services Soviet naval craft operating in the Indian Ocean. Further increases in Soviet activity are anticipated.



The missile storage facility is designed to handle shipborne surface-to-surface missiles and probably other types of tactical missiles as well.



When completed, the airfield will have a 15,000-foot runway, capable of handling any aircraft in the Soviet operational inventory.

Airpower in the News

grounds that the area was 'a Somali naval installation.'

Conclusions reached by the House group:

- That clearly there are important military facilities located at Berbera that have been constructed or are under construction by the Soviets in accordance with known Soviet designs.

- That these facilities are designed primarily to support naval forces.

- That these facilities are being operated largely by Soviet personnel residing in Berbera with limited degrees of Somali participation.

- That these facilities are clearly beyond not only the needs but the technical capabilities of current Somali forces and personnel; for example, the naval missile facility can store or handle naval missiles of a substantial size, and the Somali navy has no known capability for using even the smallest and most obsolete of these missiles.

- That whether title to them resides in the Somalis or the Soviets, they are obviously available at any time for Soviet use.

- That their existence in Berbera, at the mouth of the Red Sea and at the moment of the reopening of the Suez Canal to Soviet naval vessels, represents a significant enhancement of Soviet naval and air force capabilities to operate in the Indian Ocean.

There is some evidence, supported by Mr. Stratton's report, that the Somali government itself does not realize what kind of a camel it has admitted to the tent. Senior officials, Mr. Stratton said, did not seem to be aware of the use or potential value of the installations to Russia. In short, they probably do not know what they have in Berbera.

The experience of the Senate visitors, headed by Sen. Dewey F. Bartlett, was similar. In addition to confirming Mr. Stratton's account, members of the Senate party added further details, making Somalia sound like a Soviet colony. The Russians are training the Somali army, navy, and air force. They are teaching the Somalis to fly helicopters, MiG-21s, and MiG-15s. They are establishing airways in Somalia. On the economic side, they are improving agriculture and building small factories to produce consumer goods.

The construction program requested by the Pentagon for Diego Garcia goes back at least to 1970. Congress approved funding for a "limited communications facility" on the British-owned island in the middle of the Indian Ocean for Fiscal 1971. In its request for Fiscal 1974, the Navy sought another \$29 million to add new facilities capable of supporting a carrier task force. It was not passed. The Fiscal 1975 bill again sought the \$29 million, plus \$3.3 million for the Air Force to build a logistics station on the island. In conference, the Navy figure was cut to \$14.8 million and the Pentagon was told it could not spend anything until the President had certified the work was essential to our national interest. This was not done until May 12, 1975, and a week later Sen. Mike Mansfield, the majority leader, introduced a resolution disapproving the construction. So far, only the Senate Armed Services Committee has taken action. Following the hearing, it voted, 10 to 6, to reject the Mansfield effort and support the requirement. The position is:

"Since the United States has vital interests in the Indian Ocean area and plays a major role in maintaining stability in that area, the committee felt the United States should immediately proceed with construction of facilities at Diego Garcia. This modest expansion would most appropriately provide the United States with an improved capability to maintain a naval presence in the Indian Ocean."

Here is what the Pentagon says is needed:

- Lengthening of the single runway from 8,000 to 12,000 feet to permit its use by large cargo airplanes and tactical aircraft;

- An increase in fuel storage capacity from 60,000 to 380,000 barrels of aviation fuel, plus 320,000 barrels of fuel oil for ships;

- A dredged anchorage to accommodate a carrier task force, plus a pier for loading and unloading;

- Aircraft parking aprons, an arresting gear for Navy fighters, and limited aircraft maintenance facilities;

- Additional quarters for 300 officers and men;

- Necessary storage, power, and ancillary facilities.

Initial funding, for work through Fiscal 1979, is \$37.8 million. Total cost of the improvements, including their actual construction by the Seabees, will be about \$108 million. The resulting installation will be more modest than the one at Berbera.

The main object is to provide logistical support for US forces in the Indian Ocean area. The ocean is more than 4,000 miles from the nearest US base, Subic Bay in the Philippines.

The addition of an interest by USAF has arisen largely out of recent events in the Middle East, including the oil embargo and the threat of war. Our C-141 cargo planes have been carrying supplies to the island itself, but in a crisis it could be needed as a refueling station. General Brown pointed out that, without the use of Lajes Field in the Azores, the 1973 transport runs to Israel would have been far more complicated. A similar restraint, he added, would limit our response to a crisis in the Indian Ocean.

Sen. Barry Goldwater also brought up the fact that the new Portuguese government may close Lajes. And, he added, there is the added possibility that the Philippine Islands will force the closing of our bases there, including Subic Bay and Clark Field. USAF also wants room to accommodate some tactical aircraft, possibly F-111s, and tanker aircraft. The new runway will not support heavy bomber operations out of Diego Garcia.

Senator Mansfield, who is leading the fight to stop the project, is chairman of the Subcommittee on Military Construction of the Appropriations Committee. He is supported by his counterpart on the Armed Services Committee, Sen. Stuart Symington of Missouri. Mr. Symington argues the US should show restraint in the Indian Ocean, that the Soviet expansion is limited and no challenge, and that we have allies at sea there, including the French and British.

The key item, of course, is the nature of the Soviet installation and its probable use. The layout for missile handling and storage is familiar to our intelligence experts, who believe it is designed to service and fuel the Russian Styx, a surface-to-surface missile used against ships at sea. All the facilities, including the bunkers, appear to be for that purpose. The communications sites are equally familiar; they are designed primarily to receive and send messages between Berbera and Moscow. The POL storage facility is one of common Russian design; they have them in many countries.

At the Senate Armed Services hearing, there was

speculation about the Berbera runway, still under construction. General Brown testified that its length, close to 15,000 feet, would not be required even for heavily loaded, long-range patrol aircraft. Secretary Schlesinger pointed out that with the high temperatures common at Berbera, a Soviet Bear bomber would require 13,000 feet.

There also was discussion about the recently reopened Suez Canal and how easily it could be closed in the event of hostilities. The Secretary of Defense said he now anticipates there will be an increase in Russian traffic through the canal. He will be watching for a new pattern of naval deployment. With the canal open, the distance from the Black Sea to the Arabian Sea is cut from 11,500 miles to 2,500 miles—a matter of twenty-four days in sailing time.

Mr. Schlesinger made it clear US carriers cannot go through the canal because of their size. It is his opinion that while the opening of the Suez Canal gives Russia greater access to the Indian Ocean area, in the event of a serious conflict, it also adds risks. If it were closed, the advantage would be to the US, with Subic Bay only about 4,500 miles away.

In all of the debate about Diego Garcia, probably the most persistent issue is the charge that the military,

of both Russia and the US, threaten to turn the Indian Ocean into an arena of war. It should be, the critics say, a zone of peace. This, of course, overlooks the fact that the peace was ensured for many years by the British Royal Navy, and the nearby nations did not look upon this with disfavor. Mr. Schlesinger made this statement:

"The problem that one faces is that all of these statements about the zone of peace have taken place in the face of a fairly persistent Soviet increase of their capabilities in the Indian Ocean and have not affected these results.

"It is generally recognized that protest directed to the Soviet Union has no effect whatsoever; they do not influence the press of the Soviet Union or the parliamentary conditions in the Soviet Union, and the only place that one can acquire political leverage is by directing such comments against the democracies."

That, Mr. Schlesinger concluded, is why the pressure is put on the Pentagon and not on the Kremlin. Détente that leads to unilateral disarmament ignores the commitment cited earlier by Mr. Stennis—the commitment to protect your own hide. As we have pointed out before, détente has not dislodged one brick in the Berlin Wall. ■

The Wayward Press

Several correspondents have sent us clippings from a publication called "PARADE, The Sunday Newspaper Magazine." There is a short item in the May 25 issue that contains misinformation about USAF's monster C-5A cargo hauler. The story says there is a government report to the general effect that the C-5A did not perform well on the 1973 airlift to Israel.

Well, the report referred to was from the General Accounting Office (GAO), and here are some of the things it says:

- "MAC [Military Airlift Command] did an outstanding job of airlifting equipment and supplies to Israel. . . ."

- "The aerial delivery of combat tanks and other outside cargo by C-5s was an impressive use of airlift capability, and it is impossible to assess the psychological impact. . . ."

- "MAC and the Air Force did not bill Israel for all US costs for the airlift services . . . [this] resulted in under-billing Israel about \$45.1 million."

Is there a bloodbath?

According to the editors of *The Nation*, in their issue of June 14, "in Cambodia the much-heralded bloodbath that was supposed to follow the fall of Phnom Penh has not taken place. As for Vietnam, reports from Saigon indicate exemplary behavior . . . the revolutionaries in both countries seem to have acted responsibly." *The Nation* quotes Richard Boyle of the St. Louis *Post-Dispatch* and George Esper of AP in support of this conclusion.

Now we have Denis D. Gray of the same AP reporting from Thailand that mass executions have taken place in Cambodia. And John Rogers of the British Reuter news agency says, "Cambodia-watchers are predicting that as many as a million people may die in the next two years from starvation or because of the forced evacuation of cities." Some reporters who fled Phnom Penh as the Communists took over brought out horror stories about those evacuations. Secretary of State Henry Kissinger is quoted, from a newspaper interview he held in Atlanta, as saying "a terrible toll has been inflicted on the population of Cambodia by the new Communist authorities." Jack Anderson calls the Cambodian story "the greatest atrocity since the Nazis herded Jews into the gas chambers."

Reports from Vietnam are more spotty. Executions have been reported, a great many of them. Other newspaper articles indicate that the Communists have been restrained, presumably because they knew a bloodbath was predicted. On the basis of their previous conduct, when they massacred thousands in North Vietnam and, as recently as 1968, in Hué, the bloodbath was properly anticipated.

A second example at hand grows out of a story published on June 8 in the *Washington Post* and the *Los Angeles Times*. It was written out of Hong Kong by George McArthur, a *Times* reporter with an excellent reputation. The story sounded like one that came over the transom. It said, quoting unnamed

"authoritative sources," that American bombers conducted heavy raids in Vietnam on the day of the Saigon evacuation.

Both the Pentagon and the White House told McArthur the story was not true, before it was printed. Nevertheless, the newspapers made it the big story of the day on June 8, burying the denial deep in the news and headlining the alleged incident as fact.

To its credit, the *Washington Post* gave space to its ombudsman, Charles B. Seib, about a week later, to question the judgment of his own news editors.

Seib's conclusion:

"Did we give Vietnam one final pasting? Is official Washington trying another massive coverup? Did someone in the field pull a fast one on his superiors? Or, heaven forbid, did the *Post* and the *Los Angeles Times* bite on a sour one?"

"Maybe the history books will tell your children or their children. So far, it appears that the papers that raised those questions aren't going to tell you."

Rockefeller
Implies JFK
Knew of Plots

—Headline in the *Washington Post*, June 16.

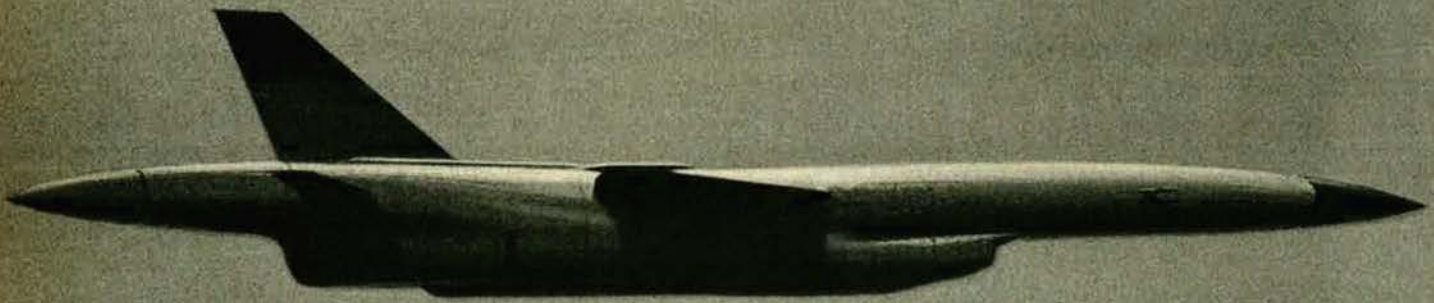
ROCKEFELLER FINDS
NO KENNEDY LINK
WITH DEATH PLOTS

—Headline in the *New York Times*, June 16.

Which newspaper did 'ja read on June 16?



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MAINTEINING US strategic nuclear forces that are in balance with those of the USSR, despite the constantly advancing technologies that undergird strategic postures, will remain our fundamental national security imperative. That is the view of this country's highest-ranking military leader. Gen. George S. Brown, Chairman of the Joint Chiefs of Staff, told AIR FORCE Magazine that "there is no concern about the ability of the United States to handle any nuclear threat *at present*. But there is real concern about our strategic capabilities in the future."

Evidence is mounting, according to General Brown, that the Soviet Union is pressing forward "vigorously with programs for near-term deployments involving many facets of strategic power. At the same time, it is improving appreciably, at a more gradual rate, its capabilities for strategic defense, and pursuing with determination the development of advanced technology covering the whole range of strategic systems."

Soviet strategic force improvements and deployments—if not curbed by arms-limitation agreements or matched by major new US programs—could "result in a strategic imbalance between the United States and the USSR in the years ahead."

The Soviet Union, according to General Brown, is not content with maintaining its present two-to-one throw-weight and megatonnage advantage. It is moving toward increasing that ratio to more than three to one while improving the accuracy and flexibility of its ICBMs and MIRVing them, he pointed out.

Soviet throw-weight advantages can't be fully exploited unless supported by efficient MIRV technology. Some defense planners believe the Soviet MIRVing program is having difficulties. General Brown rejected this view as unproven and optimistic. "Not only that, but Soviet technological achievements in the past, such as their progress in space, give us no reason to take comfort in whatever temporary trouble they may have in the development phase of weapon systems. They have shown quite convincingly that they know how to solve technical difficulties," he stressed.

The United States, General Brown said, has observed "Soviet MIRV testing, and they have just recently begun deploying MIRVed missiles."

General Brown feels that it is critically important—and in the best interest of US national security—to mutually limit nuclear arsenals. "That's why the Vladivostok understanding was so important. It capped in an equal way the number of strategic delivery vehicles of both sides. What remains to be accomplished is for Ambassador U. Alexis Johnson and his team to formalize these understandings at the SALT negotiations in Geneva and for both sides to achieve a formal agreement."

A shortage of US sealift capacity, aggravated by the Navy's presently limited ability to secure the sea lanes, is among the most pressing security challenges of the moment. But over the long pull, maintaining the strategic balance continues to be the central US defense requirement, the Chairman of the JCS tells AIR FORCE Magazine . . .

GENERAL BROWN LOOKS AT US DEFENSE NEEDS



BY EDGAR ULSAMER
SENIOR EDITOR, AIR FORCE MAGAZINE

The Chairman believes that "the Soviets, being human just as we are, need incentives to make arms control attractive. If they see us failing to maintain a fully capable and diverse array of strategic forces, they will conclude that they can realize their objectives without limiting their forces. That is why I consider it absolutely essential that the US go on with the strategic arms development and production programs as outlined by the Defense Department's five-year defense program."

Keeping open a range of strategic offensive and defensive options is also essential as "a hedge against lack of progress in mutual arms control efforts, by putting the US that much closer to producing and deploying more capable systems. . . . If we don't achieve our arms control objectives, the present pace of Soviet strategic arms development and deployment could well provide them with strategic superiority—unless we improve and expand our own forces," according to General Brown.

A third reason, aging US nuclear systems, was cited by General Brown as making force modernization compelling. The hulls of the older SSBNs are approaching a critical age, and so are the 450 Minuteman II missiles, which are beyond their designed service limit. While both systems continue to contribute to our strategic posture, "weapon systems don't last forever. They not only age, but they become obsolete and don't provide the capabilities needed to match the other side's progress. Each B-1, for example, will provide about twice the capability of a B-52."

The shift in national policy toward more flexible deterrence reinforces the need for force modernization. While he declined to reveal specifics, General Brown said, "We are hard at work doing the things that we have publicly announced, which is to give the National Command Authorities more than just the two options—shoot or don't shoot—to which we confined ourselves in the past. But flexible strategic options can't be achieved with the stroke of a pen. These are complex capabilities that we have to work up to over a long time."

Needed: Great Accuracy and Yield

General Brown rejected the thesis that more accurate US MIRVs add a hair trigger to an all-or-nothing deterrent posture. Defense Department studies conclude that in many circumstances "the most suicidal course for the United States—and hence the least credible—would be to strike an opponent's cities." This situation, according to DoD's assessments, is all the more acute because the Soviet Union has in being a nuclear capability that "goes far beyond anything required by the theories of minimum or finite deterrence. [The Soviet Union] has enough strategic systems to hit a substantial number of military targets in the United States, and elsewhere in the world, and still hold in

reserve a very large force that we would have to consider in responding."

General Brown likewise dismissed the notion that increased missile accuracy and the concomitant capability for counterforce targeting was "somehow less ethical" than a strategy of assured destruction. Evidence available to the Defense Department suggests that a short, limited nuclear exchange could result in fewer fatalities and casualties than have conventional wars. Even if a nuclear attack were to include all strategic nuclear targets in the United States, there probably would be at least 100,000,000 fewer fatalities than in an attack on US cities, according to DoD studies. Similar results would hold true for the Soviet Union.

Neither is there merit to the argument that increased US ICBM accuracy and warhead yield might be perceived as a first-strike posture. The Antiballistic Missile Treaty prevents either side's developing a broadly effective damage-limiting capability, according to General Brown. Furthermore, an attacker would face numerous uncertainties and could not effectively strike the other side's SLBM or heavy bomber force.

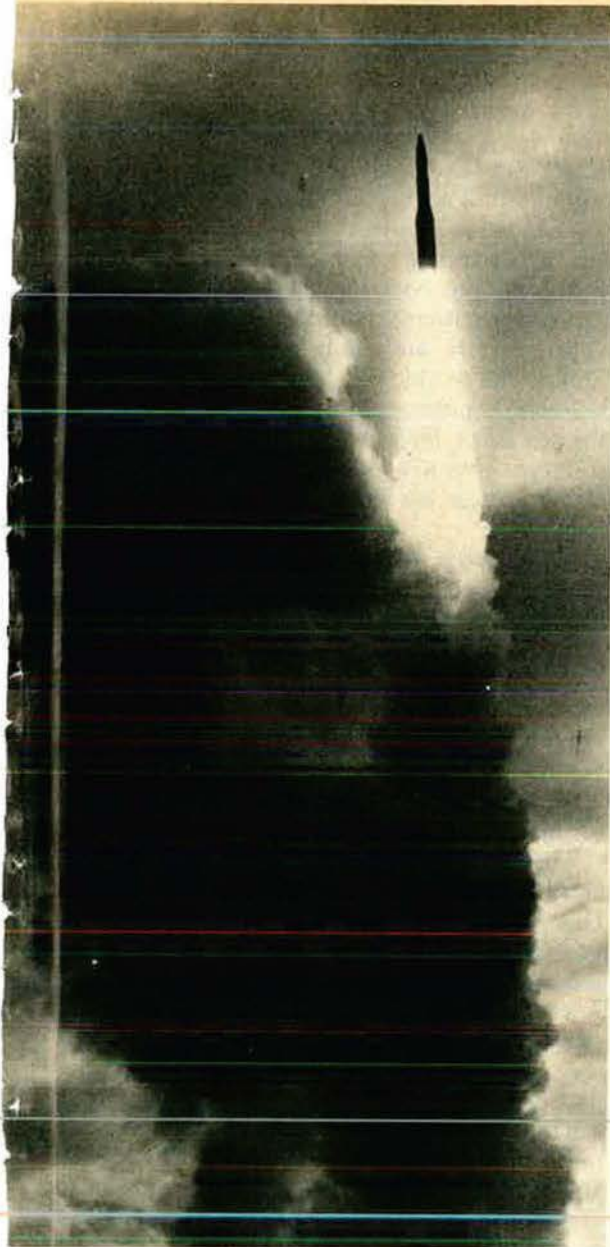
Earlier this year, Defense Secretary James R. Schlesinger announced that "we are not now seeking to develop the capability to destroy the Soviet ICBM force. We have . . . a limited hard-target kill capability in our missile forces at the present time, as do the Soviets. Our own capability against ICBMs is modest—partly because our missiles lack the proper combination of warhead yield and accuracy, and partly because of the complications introduced by the phenomenon known as fratricide.

"I believe we should improve our hard-target kill capability so as to have higher confidence of executing limited hard-target attacks. To destroy all of the very hard components of the Soviet ICBM force that are now being constructed or upgraded would require not only major qualitative improvements on our part, but also a large number of high-yield and very accurate reentry vehicles. I am not suggesting such deployment programs. . . ."

General Brown "can't agree with the thesis that developing more accurate US weapons—and attaining limited counterforce capabilities—is destabilizing. The most destabilizing act on our part would be to not provide a viable deterrent."

No Internecine Squabble Over MIRVs

In planning future US deterrent capabilities, especially while emphasizing flexibility, the mix of ICBM and SLBM MIRVed systems is critically important. General Brown thinks "it would be premature to say that we will necessarily continue the same mix of land- and sea-based ballistic missiles that we have at present." An agreement based on the Vladivostok understanding would limit each side to 2,400 strategic



The 450 Minuteman II missiles, along with older SSBNs, are approaching a critical age and will have to be replaced by newer, advanced weapons.

delivery systems, and to a total of 1,320 MIRVed ICBMs and SLBMs, with appropriate freedom to mix within their ceilings. Moreover, subsequent negotiations could result in lower levels.

All US SLBMs are either MIRVed or MRVed (multiple, but not independently targetable, reentry vehicles), while only one category of Soviet SLBM, the SS-N-6 Mod 3 carried by "Y" class submarines, is deployed with either two or three MRVs. Of the US ICBMs, the 550 Minuteman IIIs are MIRVed, while none of the 450 Minuteman IIs or fifty-four Titans is so configured. "We hope that both sides will scrap some systems. That is what arms control is all about."

Because of these uncertainties, it would be premature to decide *now* how to divide the per-

missible MIRV total between ICBMs and SLBMs, General Brown said. Final determination in part "will depend on what the other side is doing. Other factors include tradeoffs between survivability and accuracy. By going from land-based to sea-based systems, we can get greater long-term survivability. On the other hand, we can probably achieve greater accuracy by emphasizing land-based systems. This may not be true forever because it may be possible to improve the accuracy of the SLBMs to quite a high level. There has been progress in the transition from Polaris to Poseidon; there will be progress as we step up to the Trident II missile in the late 1980s; and, no doubt, there will be progress beyond that. I believe the decision on the MIRV mix should be reserved for the future. Interservice differences over the mix of ICBMs, Tridents, and bombers would be pointless and destructive. Let's wait and see what comes and then make a conscious decision on what is best for the country—without fighting among ourselves."

General Brown underscored the importance of the strategic Triad of ICBMs, SLBMs, and bombers, "as long as the permissible numbers remain close to what they are, technologies permit systems with different performance, and we have the command and control capabilities to handle them." He also acknowledged that "if we get down to significantly lower numbers, it might not be possible to retain all three modes." For the time being, however, "the Triad gives us invaluable advantages of flexibility and dispersal while vastly complicating the task of defending against it. Each system has unique capabilities, and no single system can provide the strengths we get from a combination of the three," according to General Brown.

MX and Trident

Technological options in the strategic field that the US should develop, but not necessarily deploy, over the next ten years—in addition to increased warhead accuracy and yield—include the MX system. The pace of the advanced ICBM project, known as the MX study, was "slowed somewhat" because of early optimism over the Vladivostok understandings, but may have to pick up again unless SALT II is concluded soon, General Brown told this reporter. Describing MX as "essentially a larger and improved missile that would exploit the full capabilities of the existing Minuteman silos or be deployed in a ground- or airmobile mode," he said development of the pacing technologies is moving at an optimum rate.

"Often this kind of development work can't be accelerated simply by throwing in more money," he cautioned.

Asked whether the Joint Chiefs of Staff want to begin developing an MX prototype following definition of performance requirements by a DSARC (Defense Systems Acquisition Review

Council) meeting, General Brown said the relative urgency depends on the outcome of the current round of SALT discussions in Geneva. As a minimum, the MX project should be continued at the FY '76 budget level to "provide the necessary hedge against unknowns in the strategic environment of the mid-1980s. A decision to enter engineering development of, or to deploy, the MX Advanced ICBM is several years away [and] will be based upon a continuing assessment of both SALT progress and the state of Soviet military developments," according to General Brown.

"We demonstrated the technique—or rather the basis of that technique—to deploy an air-launched missile last year. It is a long way from being an operationally deployable system, but the feasibility demonstration was completed successfully, and we should keep that option active. An airmobile system obviously offers some very attractive features for the United States," General Brown told AIR FORCE Magazine.

While the Joint Chiefs now consider the need for an advanced ICBM problematical, the requirement for the Trident SSBN/SLBM system is firm, General Brown said. "There is no doubt that we need this system which, with a greatly increased range of its missile, gives us an enormous increase in basing area and therefore a corresponding advance in survivability."

Among the most welcome results of SALT I is the agreement to limit deployment of ABM systems, General Brown said. "We are confining our ABM deployment to one Minuteman field in North Dakota. But this mutually limited deployment buys both sides a kind of mutual standoff and thereby equal security."

Command and control, and attack assessment, two related components of US strategic deterrence, "need continuous improvement. In neither case can we ever afford to be satisfied. Every exercise we run teaches us something new. We have a lot of work ahead to give us improved attack assessment capabilities, especially so far as strategic flexibility is concerned.

"In the strategic context, it is obviously essential that we obtain information about the effectiveness of whatever actions we take. Without such knowledge it isn't possible to make relevant decisions. An interactive process is involved: We war-game with what we have, go back and apply the lessons learned, and establish requirements for improved equipment. The need to do these things is continuous, even circular, because the more we do, the more we realize that we haven't done enough," according to General Brown.

Strategic Mobility and General-Purpose Forces

US military capabilities below the strategic nuclear level are influenced by strategic mobil-

ity, "a condition likely to intensify as we cut back on foreign bases. When I say mobility, I don't mean just airmobility, which has been improved and expanded, although, as the Secretary [of Defense] told Congress, we need still more. The aspect of mobility that really worries me is the heavy stuff that has to go by sea. Modernizing and expanding the merchant fleet, and the Navy to protect the sea lanes, are vital requirements. It we recognize just how dependent we are on raw materials from all around the world, and how questionable is the US Navy's present ability to handle security of the sea lanes, there is real cause for worry. We still can give a good account of ourselves in certain places but not *everywhere* at the same time.

"The Navy, today, is back to a pre-Pearl Harbor level, and while each individual ship has greater capability than ever before, it still can be in only one place at a time . . . and there are simply too many places we might have to cover. I see a strong need for more transport and combat ships and, above all, national recognition of the gravity of the situation so that we can come up with a comprehensive program to support US seapower."

The relative standing of US general-purpose capabilities compared to those of the Soviet Union "should not be evaluated on a one-on-one basis. We gauge the problem in terms of the place where we are most likely to meet Soviet forces, in the NATO area. So, when we assess our nonnuclear capabilities, we do so within the total NATO structure. That structure, in the past few years, has improved and now has some capabilities other than nuclear retaliation, but much more remains to be done. The Soviet bloc leads in manpower strength, tanks, artillery, and air defense. They are ahead in the number of tactical aircraft, but I doubt that either their people or their equipment can match ours. They have had no combat experience since World War II, while our people are truly battle tested. Our problem so far as the Army is concerned—and Gen. [Alexander M.] Haig, [Commander in Chief, Europe], and I share this concern—is that our reserve stocks in Europe, the so-called forward positioned equipment, be maintained. The Army is also suffering from low tank production," General Brown said.

An issue with direct impact on the readiness posture of the US, General Brown stressed, is "broadening the Marine Corps's scope of employment beyond the amphibious mode. The Marines have developed great expertise in amphibious operations and staked this out as their mission area. As a result, everybody has taken it for granted that there are three Marine divisions and three Marine air wings and they would go in 'over the beach.' What we really ought to do is find the most effective way of using these forces flexibly and in context with

our other capabilities." The issue is currently under study.

More Joint Training

There is great concern among all services about "the lack of training funds, especially for mobility training and joint exercises. We have been frustrated in our efforts to run major joint exercises by the tremendous costs involved, principally transportation. The Air Force is particularly affected by restrictions on training flights whose costs have increased sharply and which, as a result, we don't do often enough," according to General Brown.

The total force policy, the JCS Chairman asserted, "is showing progress, especially the associate unit approach. By sharing [the regular force's] training expertise and some equipment, we have been able to improve the capabilities of the reserve component units. We have also achieved increased realism in planning for priority units and now have more ready Reserve and Guard units. It should be obvious that if we are going to put modern, first-line equipment into those units, they must be ready to respond in a matter of hours or days, not weeks or months—or we won't get the modern equipment into battle."

Although acknowledging the need for close cooperation and coordination to prevent duplicative efforts among the services, General Brown strongly opposed dilution of individual

mission areas: "It makes no practical sense, for instance, to force the Air Force to operate from carriers. Air Force fighters simply aren't built to take the punishment of carrier landings; if they were designed to handle such landings, they would be penalized in terms of performance. Whenever possible, of course, we have one service assist another, as the Air Force will support the Navy with B-52s equipped with Harpoon missiles. But there are limits to mutual support, and it would be less than prudent to ignore the combined wisdom and experience of our past leaders" that resulted in the present delineation of mission areas.

The JCS Chairman similarly opposed wholesale revamping of the unified/specified command structure. "The easy changes have been made, such as the disestablishment of the Alaskan Command and the Continental Air Defense Command. We have put the Army component of the Pacific Command on inactive status, but the rest [such as disestablishment of PACAF] is being held at the moment. I don't expect any other major changes and hope there won't be any.

"This structure was built by our predecessors over a period of thirty years. They were truly thinking people, and what they did evolved slowly and carefully. Dismantling in a matter of months what they built, in order to achieve peacetime economies at the risk of combat capability, would be shortsighted." ■

"SEEK, AND YE SHALL FIND"

The frustration of personal plans by the receipt of a draft notice did not originate with the recent generation of youth.

In January of 1953, I proposed to a sweet little blond and asked my mother to kindly gather and keep my mail until after my return from a one-week honeymoon. On our return on a Saturday evening, and having moved into our new apartment with a new job to begin on Monday, we were enjoying dinner with my parents, after which my mother gave me a small stack of mail she had been "saving" for me.

The first envelope was a congratulatory card on our wedding. The second was "greetings" from Uncle Sam, which had been "saved" for nineteen days and stated in effect: "... as of Monday you are a private in the Army." Well, with trauma and frantic frustration, I sent a telegram to my draft board explaining that I was newly married, and requested deferment and reclassification.

Coming from a religious heritage, I added the Scripture reference of Deuteronomy 24:5 as a postscript: "When a man hath taken a new wife, he shall not go out to war, neither shall he be charged with any business: but he shall be free at home one year and shall cheer up his wife which he hath taken."

Three hours later, I received a telegram instructing me to report as ordered, with this postscript: "Acts 19:15." On looking it up, I found it reads: "And the evil spirit answered and said, Jesus I know, and Paul I know; but, who are ye?"

—Contributed by Maj. David N. Chalk, California ANG

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

THE United States Army of today stands in marked contrast to the force that emerged from Vietnam. It's not only a nice outfit to visit, but increasing numbers want to live there.

If you had to pick one word that represents the difference, it would have to be "stability." Few outside the service are even remotely aware of the tremendous upheaval that resulted from the political decision not to mobilize the Army's Reserve forces for the war in Vietnam, but require instead the active Army to double in size simply by adding draftees and newly commissioned officers.

This, coupled with the decision that the normal tour in Vietnam would be held to twelve months, ensured that turmoil, inefficiency, and disciplinary problems would prosper. All of this transpired against the backdrop of the strong antiwar protests of the late sixties exacerbating an already difficult situation.

The Army now seems to have a handle on most of those problems, and the whole spirit of today's Army is upbeat. Moreover, through organization and planning, including a much tighter integration of the Reserve components, the Army is getting itself structured to preclude any future misadventure of a similar nature.

Today's Army is an all-volunteer force in every sense of the word, and a fairly stable one. The last draftee left the Army on November 22, 1974 (the last draftee at Fort Bragg enlisted for six years), and the Army has been meeting or exceeding its recruiting quotas ever since. Educational and mental qualifications continue to be upgraded, with about seventy-five percent of the enlisted force high school graduates. Minority groups make up about twenty-four percent of the enlisted force—approximately twenty-two percent blacks, and slightly under two percent other minorities. The reenlistment rate for first-termers is 28.3 percent.

It can be fairly said that up to now the volunteer system has exceeded the hopes of even its most ardent enthusiasts. Some of the attractiveness to volunteers may be attributed to the difficulty in finding

In this first of a series of articles on our sister services, the author balances shortages, reductions, and budget constraints against improved morale, combat experience, and innovative tactics in his report on a force that, "though marginally adequate," is one that an adversary "would think twice before taking on" . . .

US ARMY 1975

BY
MAJ. GEN. ROBERT F. COCKLIN
USAR

civilian jobs, and some to the fact that there is no shooting war; but there is no denying the fact that the Army is getting the people it needs.

Not only do these longer volunteer enlistments (three-plus years compared to the two-year draft term) contribute to stability, but they enhance training and readiness as well. More time on specific assignments is reflected in the leadership, too. The goal is to give officers a thirty-two-month average tour length (it's running 31.4 in Europe now), and to provide even more stable tours for senior noncommissioned officers. All of this contributes to greater skill, improved discipline, and better morale.

An interesting statistic shows the current ratio of officers to enlisted men as 1 to 6.5, on a downward trend. To complete the import of that statistic, there are now about 103,000 officers in the Army, down about 69,000 from 1969. Among the cuts: sixty-six generals, 1,700 colonels, and 5,700 lieutenant colonels.

Some 12,000 other officers will have been RIFed in all to complete the cutback from Vietnam.

Combat Strength—Marginal But Increasing

The 1975 active Army is organized into thirteen-plus divisions and twelve separate brigade-size units augmented by a wide variety of combat support units (*i.e.*, artillery, engineers, aviation, etc.) of battalion size.

The twelve brigade-size units break out as follows: four Infantry brigades (one each in Alaska, the Canal Zone, Berlin, and at Fort Benning, Ga.); three Armored Cavalry regiments (two in Germany and one at Fort Bliss, Tex.); 31st Air Defense Brigade, Homestead AFB, Fla.; one Combat Air Cavalry brigade at Fort Hood, Tex.; three Special Forces groups.

Since 1968, the US Army has been cut in half while the Soviets have added twenty more combat divisions. Even before then, the Joint Chiefs of Staff expressed the view that a thirty-division Army force was essential for conflict control or prevention into the foreseeable future.

The present Army structure of thirteen active and eight Reserve component divisions is considered high risk and only marginally adequate to meet the demands that may be placed upon it. Therefore, one of the Army's highest continuing priorities is to add materially to combat organization, in the stark reality of a political climate that forecloses any substantial increase in total strength.

The present goal is to add three combat divisions by reducing overhead and support spaces and converting them to combat spaces. Each of the three additional divisions will have one Reserve component brigade that will work, train, and fight as an integral part of the active Army division. Special legislation is being sought that would permit these Reserve component units to be called to active duty without waiting for a Presidential declaration of national emergency. These new divisions will be stationed at Fort Ord, Calif.; Fort Polk, La.; and Fort Hunter-Stewart, Ga.

The effort to convert support spaces to combat has produced major changes within the total Army structure. Some 20,800 spaces were gained by reorganization, eliminating several commands and Army headquarters. Consolidation of training efforts, base closings, and other future management actions will provide the remainder of the spaces required.

The Army plans to increase its combat power in Europe this year by about 12,000 troops, roughly two-thirds of a division, and will deploy more next year. This will not increase Army troop strength in Europe since these new combat troops will replace support elements being withdrawn.

Strategic and Tactical Mobility

It is obvious that the Army's current overseas deployments would be inadequate to meet a variety of potential contingencies. In a sense, the present seven-division strategic reserve in the US must be flexible enough to move quickly in one or more of several directions almost at once. This focuses on one of the shortcomings in the system, and that is inadequate strategic mobility.

Sufficient strategic airlift is not available in the present or foreseeable Air Force inventory to move an Army division and its equipment to Europe, for example, in much less than three weeks, even if other essential tasks were laid aside while the move was being made. The Secretary of Defense says that if we could move a division a week to Europe, we would have enough airlift.

Surface shipping would take even longer to round up and press into service. Prepositioning major items of equipment, as has been done in Europe, reduces some of the problems, but is not an adequate solution even there, much less worldwide. So getting the troops to battle on time represents a weak link in our current defense posture.

Tactical mobility, both on the ground and in the air, is an essential ingredient for any modern army. The helicopter, the armored personnel carrier, the tank, self-propelled weapons, and the two-and-a-half-ton truck provide most of the mobility in the US Army, although "shank's

mare" is still the prime mover in many battlefield situations where the Army closes with the enemy to take and hold ground.

The brutal crucible of Vietnam, as well as close study of the desert fighting in the Yom Kippur War, provided lessons that have modified some Army tactics and doctrine as

exception of two training models and the OV-1 Mohawk that provides battlefield surveillance.

The armed helicopter got its battlefield baptism in Vietnam and proved invaluable. These helicopter gunships, integrated with ground firepower, provide en route fire suppression for air assault ships as they



well as weapons and equipment requirements.

Vietnam was the ultimate proving ground for the Army's airmobile concept, which for the first time utilized the helicopter to both move and support units as large as a division on the battlefield. This integration of helicopters, air assault, and airmobile operations into the ground force commander's scheme of maneuver has added a significant new dimension to his traditional firepower and mobility.

The Army's Gunships

The Army's current inventory of about 9,600 aircraft operates on roughly a nine-to-one basis of rotary to fixed wing. The Army has eliminated all but the utility aircraft from its fixed-wing inventory, with the

Army R&D priorities include a new advanced attack helicopter. A flight-test program this year will match the Hughes developmental entry, top, with the Bell model, below.

transport troops to landing zones. They are also used to prepare landing zones with explosive ordnance carried on board and to provide airborne security while the troops are landing.

The difficulties of terrain make the helicopter an ideal platform for aerial tank-killing—a role that was more than amply validated by the 1973 Arab-Israeli war.

After thorough studies of Lam Son 719, and the 1972 North Vietnamese Army's offensive, in which sophisticated air defense weapons were used against our aviation, and the environment of the desert war, the Army

believes its aviation can not only survive a mid-intensity conflict, but can fight very effectively. New helicopters are emerging as effective tank-killers—an extremely important plus in an area like Europe where Warsaw Pact forces have a heavy advantage in armor.

The Army does not have or seek a close-air-support mission, but will continue to rely on the other services, particularly USAF, to meet this vital requirement. Toward the improvement of the Air Force capability in the close-support area, the late Gen. Creighton W. Abrams, then Army Chief of Staff, was one of the strongest supporters of the A-10 as requests for funding were guided through the Congress.

Armor—The Most Serious Shortage

Notions about the survivability of the tank in a nonjungle conflict, and the need for armor-protected mobility for infantry, have similarly been revised as a result of the Mideast conflict. Unfortunately, in the case of the tank and the armored personnel carrier, revising requirements upwards only broadened the already existing gap between need and have.

There is one other area that shows a marked deficiency, and that is in forward-area air defense. The dimension of the problem can be no better illustrated than by the fact that the Egyptians have more SAMs along the Suez Canal than the US possesses in its entire inventory.

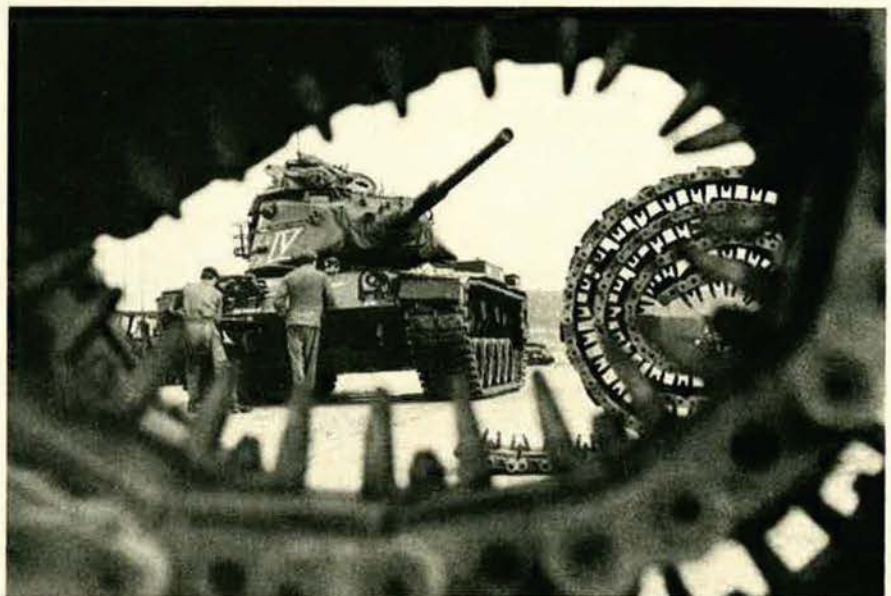
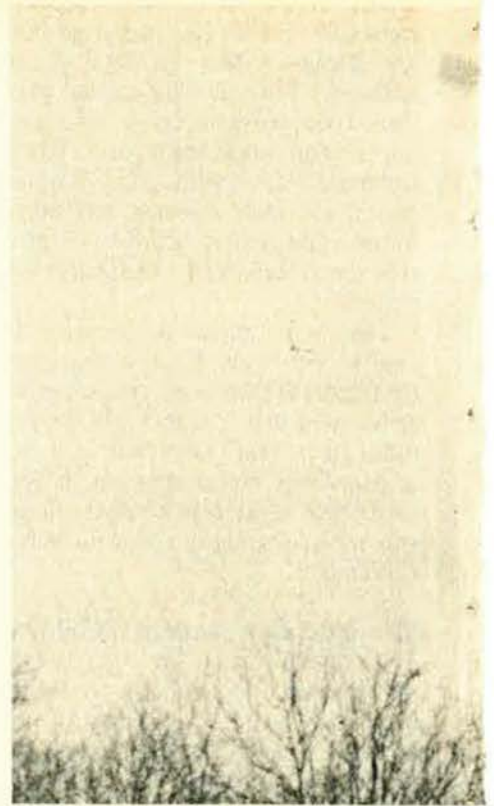
Both the Army's procurement and R&D budgets start to address these deficiencies, and to the extent the budgets survive the maelstrom of Capitol Hill, these shortfalls will be diminished.

Tanks are not only the most serious shortage but represent one of the unwitting pawns in the military aid chess game. We either sold or gave away to other countries more tanks (more than 650) than we produced last year, despite the grave shortages in our own Army.

We had 7,940 tanks in our inventory on December 31, 1974 (the Soviets have in excess of 40,000). However, only 5,017 of ours were diesel-powered M-60 series tanks mounting the 105-mm or 152-mm gun, capable of consistently penetrat-

ing the Soviet tank at longer ranges. Only 3,463 were the most modern M-60A1 and M-60A2 tanks of the kind currently in production. The FY '76 budget request calls for \$99 million to convert some 504 M-48A1 tanks to diesels and to mount a 105-mm gun on them. Also in the budget is money for 562 Product Improved M-60A1 tanks and 100 new M-60A1E3s. Most importantly, the budget contains funds to expand the tank production base. With only one source at present to provide the large castings needed for hulls and turrets, tank production is constrained as much by production capability as by money.

Tanks provide a good example of inflation in the Army's procurement budget. In the FY '75 budget, Congress approved requested funds to purchase 510 M-60A1 tanks. Because of inflation, the dollars appropriated covered the cost of only 430 tanks—seventy-one fewer than even the Congress agreed were needed.



The Army's most serious shortage is in tanks, such as this M-60 that is superior to Soviet armor. Inflation drastically cut into FY '75 procurement.

Other procurement highlights of the FY '76 budget include funds for an additional thirty-eight AH-1S Huey Cobra/TOW helicopters; twenty UX utility aircraft; 520 Improved Hawk air defense missiles; 28,813 helicopter or vehicle-mounted TOW anti-aircraft missiles; 19,300 man-portable Dragon antitank missiles; 1,320 armored personnel carriers; \$66 mil-

lion to begin the purchase of the French-German-designed Roland II short-range air defense missile system; and, of course, a big buy (\$751.4 million) of ammunition.

The "Big Five" in R&D

The main thrust of the Army's R&D is contained in the so-called "Big Five." The first of these is the



Top, the Boeing Vertol YUH-61A is competing with a Sikorsky developmental helicopter to become the Army's Utility Tactical Transport Aircraft System (UTTAS). Left, a SAM-D surface-to-air missile leaves its canister in a test firing. It is to replace the Nike-Hercules and the Improved Hawk in battlefield defense.



Advanced Attack Helicopter (AAH), designed to provide a major tank-killer with a night and adverse weather capability. Hughes Aircraft Co. and Bell Helicopter were awarded development contracts in June 1973. The flight test program is scheduled to begin in September 1975.

The Utility Tactical Transport Aircraft System (UTTAS) will be a new twin-engine squad assault helicopter, designed to provide assault helicopter companies, air cavalry units, and aeromedical evacuation units with an aircraft of substantially improved payload. Sikorsky and Boeing Vertol completed their preliminary flight approval tests and successful first flights in October and November 1974.

Surface-to-Air Missile Development (SAM-D) is being developed to replace both the Nike-Hercules and the Improved Hawk as a battlefield air defense system. It is to pro-

The author, Maj. Gen. Robert F. Cocklin, USAR, was a World War II artillery commander in the Pacific. Since 1950, he has been Director of Public Affairs for the Association of the United States Army. General Cocklin has written several books and is Special Assistant to the Secretary of the Army for Information in his mobilization assignment.

vide an increased rate of fire by combining the ability to simultaneously engage and defeat multiple aircraft in an intense electronic countermeasure environment with a significant reduction in personnel and maintenance requirements. Raytheon and Martin Marietta are the prime contractors.

Mechanized Infantry Combat Vehicle (MICV) is being developed as a squad-carrying armored vehicle mounting either a chain gun or a Gatling gun plus firing ports for the infantrymen aboard. FMC is the prime contractor.

New Battle Tank (XM-1) is at about the mid-point of the validation phase for a new tank that is supposed to provide significant advances in protection, mobility, and more lethal firepower. Chrysler and General Motors are competing for future production.

The O&M Crunch

The Operations and Maintenance appropriation impacts on every Army activity. Gen. Frederick C. Weyand, the Army's Chief of Staff, told the Congress that "it sets the standard of living of the Army and is the appropriation with the most direct impact on Army morale and effectiveness." He went on to point out what the inflated costs in the O&M budget were doing to training and maintenance.

Some programs or activities supported by O&M funds in FY '76 are: 5,948 aircraft with fuel and related costs to cover 1,200,221 flying hours; fifty-seven Army hospitals with expected patient load of 8,322; the operation of fourteen major supply depots; about 130 active major military installations; and the direct hire of some 189,143 civilian employees.

There is \$446 million for the maintenance of real property; \$202 mil-



An artist's conception shows another top R&D priority, the Mechanized Infantry Combat Vehicle (MICV). The squad-carrying armored vehicle will have a chain gun or a Gatling gun as well as firing ports for infantrymen inside.

lion for travel and transportation costs for military and civilian personnel; \$154 million for operation and maintenance of worldwide defense communications systems; \$144 million for depot level maintenance of aircraft engines and accessories;

\$2.6 billion for the payment of direct-hire civilian salaries and related costs; \$1 billion-plus for supplies and materials. Also supported are an average of 46,622 trainees, 3,346 Army students in civilian institutions, 34,700 students in Army schools,

THE UPS AND DOWNS IN THE SIZE OF THE US ARMY

FISCAL YEARS	PERSONNEL	
1948	554,000	
1952	1,596,000	← (INCL. RESERVE MOBILIZATION FOR THE KOREAN WAR)
1955	1,109,000	
1961	859,000	
1962	1,066,000	← (INCL. RESERVE MOBILIZATION FOR THE BERLIN CRISIS)
1965	969,000	
1968	1,570,000	← (INCL. RESERVE MOBILIZATION FOR THE VIETNAM WAR)
1971	1,124,000	
1972	811,000	
1973	801,000	
1974	783,000	
1975	785,000	
1976	785,000	



Concepts of tactical mobility on the ground and in the air were developed in Vietnam. A CH-54A Flying Crane here sling-lifts a truck into an airmobile base camp area near An Khe during a search and destroy operation.

4,150 USMA cadets, and 43,865 ROTC cadets.

Inflation really clobbers the O&M accounts because no allowance for inflation factors is made when the budget is submitted. It got so bad in FY '75 that the Army had to re-program money from procurement accounts to O&M accounts just to keep the lights and heat on. It could be said that the Army overdid the stability bit when it choked off all TDY travel because of fund shortages.

The Army's share of DoD's inflation bite was about \$1.2 billion. Early estimates as the Congress considers the FY '76 budget indicate an inflation shortage of \$1 billion in Army accounts even if the budget passes without a cut.

New Look in Total Force

The Army's Reserve components account for about ten percent of the Army budget, but are playing a vastly bigger role in the Army's contingency planning. The affiliation program that calls for a Reserve component brigade in each of the

new divisions is being expanded beyond the divisions. By the end of FY '77, the Army expects to move from the present thirty-four Reserve component-affiliated battalions to ninety-six. The goal is to get them as fully equipped as possible and to man them at 100 percent strength. The Army's Reserve components have met their recruiting goals consistently in the face of much early skepticism.

The impression permeating all echelons of the Army that one visits is that the Army has finally made the total-force concept a viable reality. There are equipment shortages, to be sure, and various other harassments, some real and some imagined. There is no doubt, however, that through the CONUS Armies and the Readiness Regions of the Army's Forces Command, the active Army is working more closely with the Reserve components, and supporting them more fully than ever before.

Army planners face a host of challenging contingencies as they scan a disordered world. The growing dis-

array in world affairs has raised the imperative for an Army force that is completely equipped, highly mobile, and able not only to win that crucial first battle but to stay the course.

On the plus side, the US Army today is the most combat-experienced in our history, with some of the senior leadership having fought in three major conflicts. Tactics, organization, morale, and manpower all appear to be equal to the Army's mission.

But there are serious shortages in equipment that won't be remedied overnight. The modernization reflected in the R&D programs is badly needed to compete with the much greater effort of the Soviets. Inflation erodes readiness, training, and maintenance, and harasses the effort in a variety of smaller ways.

Still, as you visit around the Army, you sense the quiet confidence of professionals who are good at their jobs and know it. You have to conclude that, if given their budget, a stable manpower base, and a little TLC, the Army would be fully capable of meeting the tasks it has been assigned. Even now, a potential adversary would think twice before taking it on.

As they say in that commercial, "Ya' gotta believe." ■

US ARMY DIVISIONS

Continental United States

82d Airborne, Fort Bragg, N. C.

101st Airborne (AAslt),

Fort Campbell, Ky.

2d Armored, Fort Hood, Tex.

1st Cavalry, Fort Hood, Tex.

4th Infantry Mechanized,

Fort Carson, Colo.

9th Infantry, Fort Lewis, Wash.

1st Infantry Mechanized,

Fort Riley, Kan.*

Europe

1st Armored

3d Armored

3d Infantry Mechanized

8th Infantry Mechanized

Brigade of 1st Infantry

Mechanized

Hawaii

25th Infantry *

Korea

2d Infantry

* Some units are detached.



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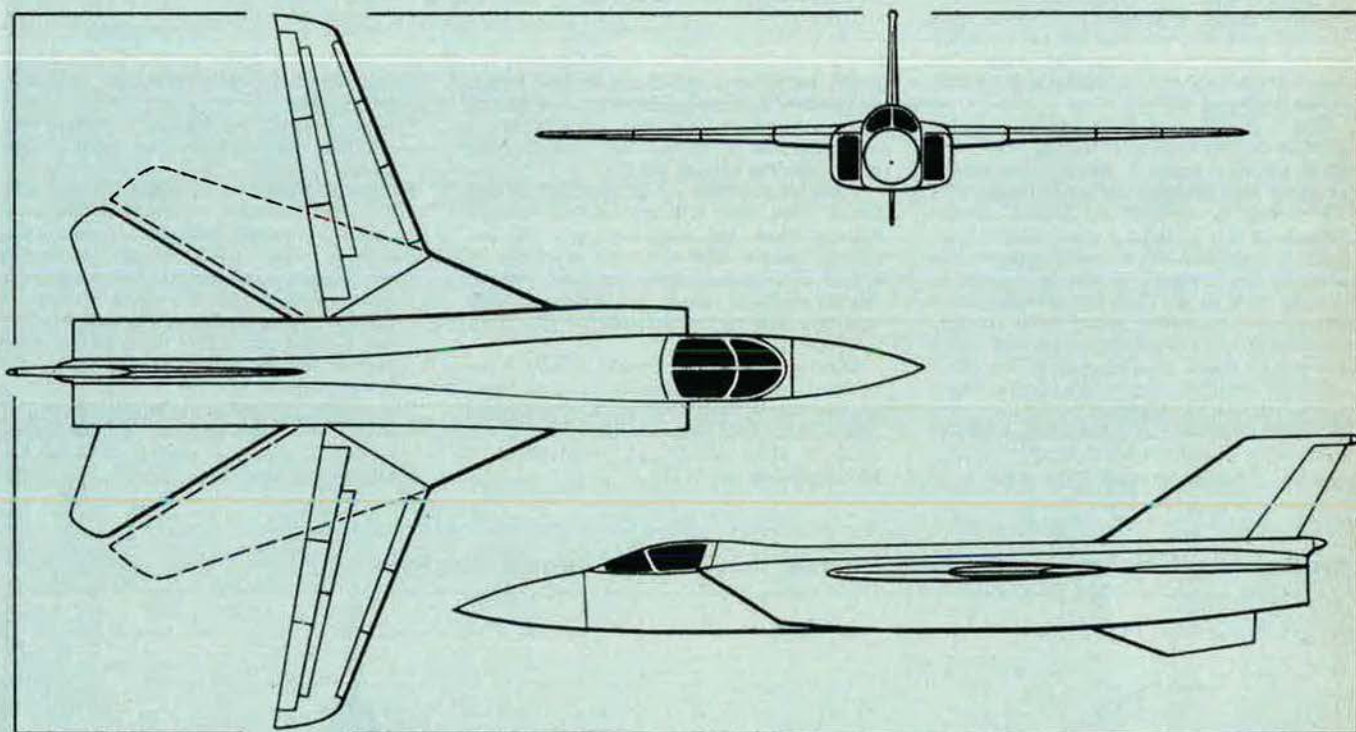
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Sukhoi Su-19 two-seat twin-jet fighter-bomber (Pilot Press; provisional)

SUKHOI
GENERAL DESIGNER IN CHARGE OF
BUREAU: *Pavel Osipovich Sukhoi; USSR*

SUKHOI Su-19
NATO code name: "Fencer"

This variable-geometry attack aircraft was identified as a major new operational type by Admiral Thomas H. Moorer, then Chairman of the US Joint Chiefs of Staff, in early 1974, when he described it as "the first modern Soviet fighter to be developed specifically as a fighter-bomber for the ground attack mission". Designated Su-19 in the Soviet Union, it is in the same class as the USAF's F-111.

No photographs or officially-released details of the Su-19 had been made available

by mid-1975. However, it is believed that the accompanying three-view drawing, produced with the co-operation of Grumman Corporation, USA, reflects the aircraft's major characteristics. Seating for the crew of two is shown to be side by side in a slim and clean fuselage typical of Sukhoi designs. The wings are pivoted much further inboard than on the Su-17/20 or Tupolev "Backfire". Each is shown with flying control surfaces and high-lift devices similar in principle to those of the F-111, comprising full-span leading-edge and trailing-edge flaps, with airbrake/lift dumpers forward of the latter operating also as spoilers for lateral control at low speeds. This implies that the all-moving horizontal tail surfaces operate both differentially and

symmetrically to provide aileron and elevator functions.

Wing leading-edge sweep appears to be approximately 23° in the fully-spread position, and 70° fully swept, this latter angle being slightly greater than that on the centre-section glove. The wings are shown without dihedral or anhedral.

The Su-19 was in squadron service by early 1975, with some examples based in East Germany. Armament includes a variety of guided and unguided air-to-surface weapons, in addition to a GSh-23 23 mm gun.

DIMENSIONS, EXTERNAL (estimated):

Wing span:	
spread	56 ft 3 in (17.15 m)
swept	31 ft 3 in (9.53 m)
Length overall	69 ft 10 in (21.29 m)

IAI
ISRAEL AIRCRAFT INDUSTRIES LTD;
 Head Office and Works: Ben Gurion International Airport, Lydda (Lod), Israel

IAI KFIR (LION CUB)

The refitting of Israeli Air Force Mirage III-CJ combat aircraft with General Electric J79 turbojet engines, to enhance their capability and prolong their useful life, has been reported consistently by press sources since 1970. About 40 of these aircraft took part in the "Yom Kippur" war in October 1973, during which they numbered Arab-piloted MiG-21s among their victims. This programme, which involves no other major modifications to the Mirage airframe, continues at IAI under the project name "Salvo".

In addition, IAI has developed a more extensively modified and further improved version of the same airframe/engine combination, details of which were officially made public for the first time on 14 April 1975, when two of the new aircraft were displayed at Ben Gurion Airport, Lydda.

The new aircraft, now known as the Kfir, originated in 1969 and was at that time given the security code name "Black Curtain". After its first flight, in September 1971, it was named Neshar (Eagle) during its development test programme, and was renamed Barak (Lightning) in 1972 when the first production conversion was accepted by the Israeli Air Force. The name Kfir was allocated to the new production aircraft in the Spring of 1975.

The Kfir utilises a basic airframe similar to that of the Dassault Mirage III/5, the main changes being a shorter but larger-diameter rear fuselage, to accommodate the J79 engine; an enlarged and flattened undersurface to the forward portion of the fuselage; introduction of a dorsal air scoop, in place of the triangular dorsal fin fairing, to provide cooling air for the afterburner; a strengthened landing gear, with longer-stroke oleos; an elongated nose, extending the overall length to approx 50 ft 2 in (15.3 m); and modified wing leading-edges. Metal Resources Inc of Gardena, California, has an IAI subcontract to manufacture replacement wing components for Israeli Mirages. Several internal changes have also been



Israel Aircraft Industries Kfir (Lion Cub) aircraft for air defence and ground attack (General Electric J79-GE-17 afterburning turbojet engine)

made, including a redesigned cockpit layout, addition of a considerable amount of Israeli-built avionics equipment, and possibly a slight increase in internal fuel tankage compared with the Mirage III/5.

Intended for both air defence and ground attack roles, the Kfir retains the standard Mirage fixed armament of two 30 mm DEFA cannon, and can carry a variety of external weapons including the Rafael Shafrir air-to-air missile. It has demonstrated stall-free gun firing throughout the flight envelope.

Descriptions of the Mirage III and 5 can be found under the Dassault-Breguet heading in the French section of the current *Jane's*. The following are the main differences of which details had been learned up to the Spring of 1975:

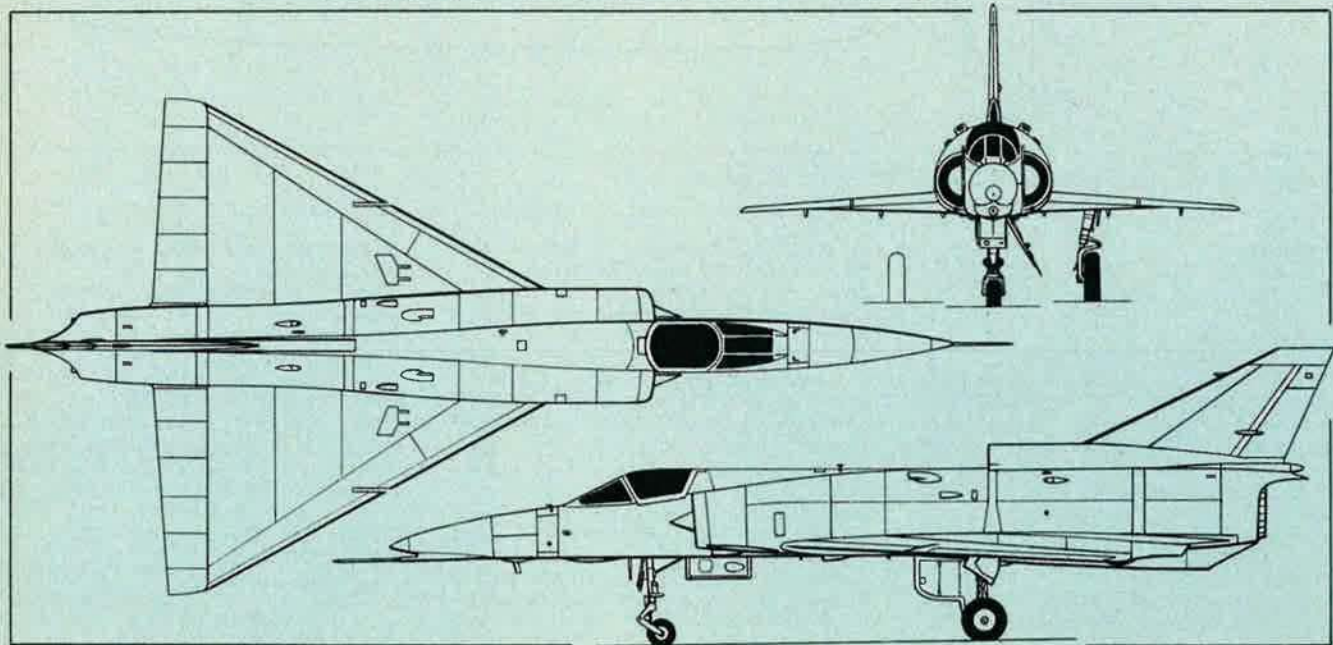
TYPE: Single-seat interceptor and close support aircraft.

WINGS: Basically as Mirage III/5 but with modified leading-edges and high-lift devices.

FUSELAGE: Similar to Mirage III/5, but with elongated forward section and nosecone (built of locally-developed composites), locating pilot further forward of engine air intakes, and enlarged-diameter rear section with approx 2 ft (0.61 m) shorter tailpipe. Cross-section of forward fuselage has a wider and flatter undersurface than that of Mirage Ventral fairing under rear fuselage.

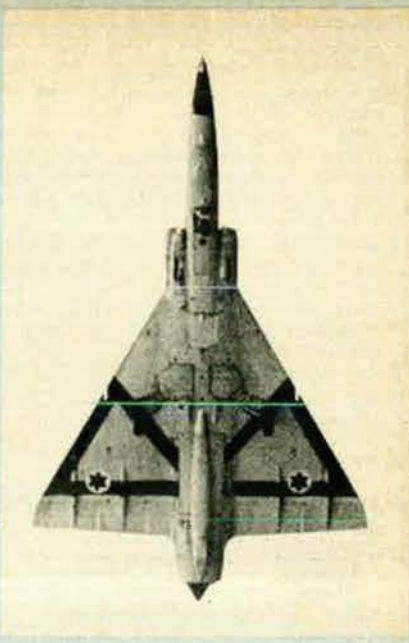
TAIL UNIT: Basically as Mirage III/5 but with dorsal fin replaced by triangular-section air scoop to provide cold air for afterburner cooling.

Israel Aircraft Industries Kfir single-seat fighter, embodying Mirage III/5 design features (Pilot Press)





Above, the Kfir taking off. At right, underview of the Kfir in flight shows resemblances to the Mirage III/5. This single-seat, Mach 2.2 plus combat aircraft is developed and manufactured by Israel Aircraft Industries



LANDING GEAR: Similar to Mirage III/5, but with longer-stroke oleos and strengthened to allow for higher operating weights. Main-gear leg fairings shorter than on Mirage, inner portion of each fairing being integral with fuselage-mounted wheel door.

POWER PLANT: One General Electric J79-GE-17 turbojet engine, rated at 11,870 lb (5,385 kg) st dry and 17,900 lb (8,120 kg) st with afterburning. Air intakes enlarged to allow for higher mass flow. Standard internal fuel capacity of the Mirage III is 732.5 Imp gallons (3,330 litres); Kfir may have provision for an additional fuel tank in the fuselage, and probably has an external capability similar to that of the Mirage 5, which can carry up to 1,034 Imp gallons (4,700 litres) of auxiliary fuel in external drop-tanks or 220 Imp gallons (1,000 litres) in combination with 8,820 lb (4,000 kg) of ordnance.

ACCOMMODATION: Pilot only, on Martin-Baker JM.6 zero-zero ejection seat, under rearward-hinged upward-opening canopy. Revised cockpit layout compared with Mirage III/5.

ELECTRONICS AND EQUIPMENT: MBT Weapons Systems twin-computer fly-by-wire flight control system. Elta Electronics multi-mode navigation and weapon delivery system. Israeli-built head-up display and gun-sight. Aerial under nose for Doppler radar

or radar altimeter. Two blade-type antennae also under nose, between radome and nose-wheel unit.

ARMAMENT: Two 30 mm DEFA cannon in undersides of engine air intake trunks, as in Mirage III/5. Rafael Shafir dog-fight missiles for air-to-air combat. Ground attack version can carry conventional bombs, rocket pods, or Maverick or Hobos air-to-surface missiles.

WEIGHT:

Max combat T-O weight
approx 31,965 lb (14,500 kg)

PERFORMANCE:

Max level speed
over Mach 2.2 (1,260 knots; 1,450 mph;
2,335 km/h)
Stabilised ceiling (combat configuration)
above 50,000 ft (15,240 m)

WSK-PZL-SWIDNIK

WYTWORNIA SPRZETU KOMUNIKACYJNEGO Im. ZYGMUNTA PULAWSKIEGO-PZL-SWIDNIK (Zygmunt Pulawski's Transport Equipment Manufacturing Centre, Swidnik); Head Office and Works: Swidnik k/Lublina, Poland

WSK-SWIDNIK MI-2M

Design of this enlarged, modified, and more powerful version of the Mi-2 began at WSK-Swidnik in 1968; construction be-

gan in the following year. Five development aircraft were built, the first of which made its first flight on 1 July 1974. Production, in passenger/cargo, ambulance, and agricultural versions, was about to begin in the Spring of 1975.

TYPE: Twin-turbine general-purpose light helicopter.

ROTOR SYSTEM: Generally similar to Mi-2. Three-blade fully articulated single main rotor, with flapping, drag, and pitch hinges and anti-torque vibration dampers. Blades of NACA 230-13M constant section, built of aluminium alloy, with an extruded spar and bonded honeycomb trailing-edge pockets. Blade spars attached to steel hub by steel grips. Rotor brake fitted. Blades do not fold. Two-blade semi-rigid tail rotor, with aluminium alloy bonded blades and steel hub. Tail section and tail rotor blades do not fold.

ROTOR DRIVE: Twin turbines drive through freewheeling units and rotor brake to main gearbox. Steel drive-shafts. Tail rotor shaft driven through intermediate and tail gearboxes. Main and tail rotor/engine rpm ratios as for standard Mi-2.

FUSELAGE: As for Mi-2, but of enlarged size and having a completely flat floor.

TAIL UNIT: As for Mi-2.

LANDING GEAR: Tricycle type, with single-wheel non-retractable main units and twin-wheel fully-retractable steerable nose unit. Oleo-pneumatic shock-absorbers on all three units. Main-wheel tyres size 600 x 180 mm, pressure 64 lb/sq in (4.5 kg/cm²); nosewheel tyres size 400 x 150 mm, pressure 50 lb/sq in (3.5 kg/cm²). Pneumatic brakes on main wheels. Tailskid of reinforced plastics.

POWER PLANT: Two 450 shp Polish-built Isotov GTD-350 turboshaft engines, mounted side by side above cabin. Fuel in integral tank beneath cabin floor, capacity 182.5 Imp gallons (830 litres). Provision for carrying a 52.5 Imp gallon (238 litre) auxiliary tank externally on each side of fuselage. Oil capacity 5.4 Imp gallons (25 litres).

ACCOMMODATION: Normal accommodation for one pilot on flight deck and nine passengers in cabin. Sliding doors on each side to both flight deck and main cabin. Cabin heated and ventilated.

SYSTEMS: Single hydraulic system, pressure 925 lb/sq in (65 kg/cm²) for control

WSK-Swidnik Mi-2M, an enlarged and more powerful version of the licence-built Mil Mi-2



system. Pneumatic system, pressure 710 lb/sq in (50 kg/cm²), for main-wheel brakes. 24V DC and 208V 400Hz AC electrical systems, including two 3kW starter/generators, one 16kVA alternator and two 28Ah batteries. Electrical anti-icing of main and tail rotor blades. Engine air intake de-icing by engine bleed air. Automatic or manual fire extinguishing system for engines and main gearbox compartment.

ELECTRONICS AND EQUIPMENT: Standard equipment includes two medium and short wave transceivers, gyro compass, radio compass, and radio altimeter. Special equipment includes rescue hoist and engine air intake filters.

DIMENSIONS, EXTERNAL: As for Mi-2, except:

Distance between rotor centres	28 ft 10½ in (8.80 m)
Height to top of rotor hub	12 ft 11½ in (3.95 m)
Wheel track	11 ft 9¼ in (3.588 m)
Wheelbase	8 ft 1¼ in (2.469 m)
Cabin doors (port and stbd, front):	
Height	3 ft 7¼ in (1.10 m)
Width	1 ft 11¼ in (0.60 m)
Cabin doors (port and stbd, rear):	
Height	3 ft 7¼ in (1.10 m)
Width	3 ft 7¼ in (1.10 m)

DIMENSIONS, INTERNAL:

Cabin:	
Length, incl flight deck	13 ft 4¼ in (4.07 m)
Mean width	4 ft 9 in (1.45 m)
Mean height	4 ft 9 in (1.45 m)
Floor area	60.28 sq ft (5.60 m ²)
Volume	226.0 cu ft (6.40 m ³)

AREAS: As for Mi-2

WEIGHTS AND LOADINGS:

Basic operating weight empty	5,213 lb (2,365 kg)
Max payload	1,984 lb (900 kg)
Max T-O weight	8,157 lb (3,700 kg)
Max disc loading	4.59 lb/sq ft (22.4 kg/m ²)
Max power loading	10.14 lb/shp (4.6 kg/shp)

PERFORMANCE: As for Mi-2, except:

Max rate of climb at S/L	1,320 ft (402 m)/min
Service ceiling	11,950 ft (3,640 m)
Hovering ceiling out of ground effect	1,640 ft (500 m)
Range at 1,640 ft (500 m) with max internal and auxiliary fuel, 30 min reserve	210 nm (242 miles; 390 km)

SPERRY

SPERRY FLIGHT SYSTEMS DIVISION, SPERRY RAND CORPORATION; Address: PO Box 21111, Phoenix, Arizona 85036, USA

SPERRY (CONVAIR/GENERAL DYNAMICS) F-102A DELTA DAGGER. USAF designations: QF-102 and PQM-102

Under a \$5.5 million contract awarded on 31 March 1973, Sperry Flight Systems Division undertook conversion for the USAF of eight Convair F-102A interceptors to drone configuration, to provide up-to-date "threat simulation" targets for USAF air-to-air weapons tests.

Two of these aircraft, designated QF-102, retain normal cockpit controls and can be flown by monitoring pilots.

The other six, designated PQM-102, are designed and equipped entirely for unmanned operation. The PQM-102 is therefore the first-ever fighter aircraft converted for drone duties to have no provision whatever for manned flight, and cannot be flown except under remote control. It was developed at Eglin AFB, Florida, by the Armament Development and Test Center of AF Systems Command, and has greater speed and manoeuvrability than the manned F-102A, resulting from its lower operating weight. For use in the evaluation of air-to-air weapon systems, the PQM-102 is ground controlled through a remote data link, and a pre-programmed manoeuvring capability that can be initiated or terminated by the ground controller.

The first PQM-102 was flown for the first time on 13 August 1974, and 23 flights had been made by early 1975. Flight testing, conducted by the 6585th Test Group of the Air Force Special Weapons Center at Holloman AFB, New Mexico, was carried out over the White Sands Missile Range.

A follow-on subcontract to convert a further 31 F-102As to PQM-102s has been awarded to Fairchild Industries' Aircraft Service Division, and the USAF's current plans call for a total procurement of 128 PQM-102s over a six-year period. The US Army has elected to purchase 14 for use in evaluating ground-to-air missiles. Most flights will take place over the Gulf of Mexico from Tyndall AFB, Florida, site of Aerospace Defense Command's Air Defense Weapons Center.

The following data apply to the PQM-102:

POWER PLANT: One Pratt & Whitney J57-P-23A turbojet engine, rated at 11,700 lb (5,307 kg) st dry and 17,200 lb (7,802 kg) st with afterburning.

DIMENSIONS, EXTERNAL:

Wing span	38 ft 1½ in (11.62 m)
Length overall	68 ft 4¾ in (20.84 m)
Height overall	21 ft 2½ in (6.46 m)

AREA:

Wings, gross	695.0 sq ft (64.57 m ²)
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PERFORMANCE:

Max speed	Mach 1.2 (688 knots; 792 mph; 1,274 km/h)
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Operating height range

200 ft (61 m) to 55,000 ft (16,765 m)	+8
g limit	

US AIR FORCE

UNITED STATES AIR FORCE; Address: Office of Information, Air Force Systems Command, Andrews AFB, Maryland 20334, USA

TEDS (Tactical Expendable Drone System)

Original plans to issue RFPs (Requests For Proposals) for a TEDS vehicle to two competing contractors in October 1972 were deferred when proposed funding was deleted from the FY 1974 budget request. The TEDS programme was reintroduced in FY 1975, and a flight demonstration phase was due to begin in the second half of 1975. This will use, as recoverable demonstrators, three Beechcraft Model 1089 VSTT prototypes and three Northrop MQM-74C targets, modified to incorporate electronic warfare packages designed by Sanders Associates and E-Systems respectively. Contractor proposals were submitted to AF Systems Command on 24 February 1975, and contracts were announced in June.

The Beechcraft and Northrop vehicles are intended as proof-of-concept demonstrators only, and are not intended as contenders for a production TEDS. The latter will, of course, be non-recoverable, and is intended primarily for mobile ground-launch, although air-launch capability may be included as an option. Payload will be in the order of 50-100 lb (23-45 kg), and the primary electrical power source 1kW or less. TEDS is seen as having two basic functions: as a straightforward decoy, carrying active or passive ECM, or to accompany strike aircraft and provide them with ECM support. Luneberg lenses will provide the primary means of radar augmentation.

AMMR (Advanced Multi-Mission RPV)

Intended successor to the Teledyne Ryan BGM-34C, for service in the early 1980s. Designs, invited in 1975 from three competing companies, will incorporate a drone control and data retrieval system (CDRS), and data relay by Compass Cope-type RPVs. The CDRS, aimed at demonstrating simultaneous control of up to 20 RPVs in the face of intensive jamming, entered the prototype stage in late 1974, and industry briefing took place at about the same time. In April 1975, one-year study contracts were awarded to Boeing Aerospace, Northrop Corporation (Ventura Division), and the Missile Systems Division of Rockwell International.

Sperry (Convair/General Dynamics) PQM-102, the first-ever fighter aircraft converted for drone duties with no provision for manned flight



VLCHV (Very Low Cost Harassment Vehicle)

Mini-RPV programme to develop a small vehicle (possibly pre-programmed rather than remotely piloted) able to loiter over hostile air defences for up to 4 hr, either in an unarmed capacity to draw the defences' fire and provoke radar silence, or armed with homing devices and an explosive charge to destroy a hostile radar. About a dozen US aerospace companies were scheduled to complete paper studies by 20 April 1975 and submit them for evaluation; and system studies, by E-Systems' Melpar Division and Lockheed Missiles and Space Co, were scheduled for completion by July 1975. Meanwhile, field tests were to be carried out with the E-Systems Auxiliary mini-RPV, which has already demonstrated its radar homing capability. Another possible VLCHV contender is a 10 ft (3.05 m) long vehicle with a 14 ft (4.27 m) wing span, able to carry a 75 lb (34 kg) payload and two 2.75 in rockets. The US Army has a broadly similar requirement for a small "kamikaze" RPV able to fly a warhead into a target.

DASSAULT

AVIONS MARCEL DASSAULT/BREGUET AVIATION; Head Office: 27 Avenue du Professeur Pauchet, 92420-Vaucresson, France

DASSAULT MIRAGE F1-E

This single-seat multi-mission fighter was developed with French government support, initially to flight test at speeds well beyond Mach 2 the SNECMA M53 turbofan that has been chosen to power French fighters of the 1980s. The combination of an advanced engine and the well-proven airframe of the Mirage F1, in standard service with the French Air Force, made the F1-E itself so promising that it became one of the major contenders in the competition to find a replacement for the Starfighters of the Belgian, Netherlands, Danish, and Norwegian Air Forces during the first half of 1975. A tandem two-seat combat/training version is projected as the F1-D.

The prototype Mirage F1-E flew for the first time on 22 December 1974. Major features are as follows:



Prototype Dassault Mirage F1-E multi-mission fighter (SNECMA M53 turbofan engine)

POWER PLANT: One SNECMA M53 turbofan engine, rated at 12,235 lb (5,550 kg) st dry and 18,740 lb (8,500 kg) st with afterburning. Fuel tanks in centre and rear fuselage, around and between intake trunks and around engine; also in inboard half of each wing, between spars. Internal fuel capacity 946 Imp gallons (4,300 litres). Max fuel capacity 1,830 Imp gallons (8,320 litres), including two 255 Imp gallon (1,160 litre) underwing tanks and one 374 Imp gallon (1,700 litre) tank under fuselage.

EQUIPMENT: Thomson-CSF Cyrano IV Srs 100 modular fire control radar in nose, with look-down capability. Inertial navigation system with digital computer. SFENA 505 autopilot. UHF transceiver, VOR/ILS digital receiver, digital OBS, and VHF/UHF equipment.

ARMAMENT: Installed armament of two 30 mm DEFA 553 guns, each with 770 rounds, in lower fuselage. Seven external attachments for stores: one under fuselage with capacity of 4,500 lb (2,040 kg); two under each wing, with capacity of 2,800 lb (1,270 kg) and 1,100 lb (500 kg)

respectively; and one at each wingtip, capacity 280 lb (127 kg). Armament for the interception role comprises two Matra 550 Magic or Sidewinder close-range missiles on the wingtips, plus two Matra 530 or Super 530 missiles under the wings. Attack armament includes an air-to-surface missile in the class of the AM39 Exocet or Martel, packs of 18 or 36 SNEB 68 mm rockets, and more than three tonnes of bombs of various kinds.

DIMENSIONS, EXTERNAL:

Wing span 27 ft 8½ in (8.45 m)
Wing aspect ratio 2.8
Wing thickness/chord ratio 4.5 to 3.5%
Length overall 50 ft 11½ in (15.53 m)
Height overall 14 ft 11½ in (4.56 m)

AREA:

Wings, gross 269.1 sq ft (25.00 m²)

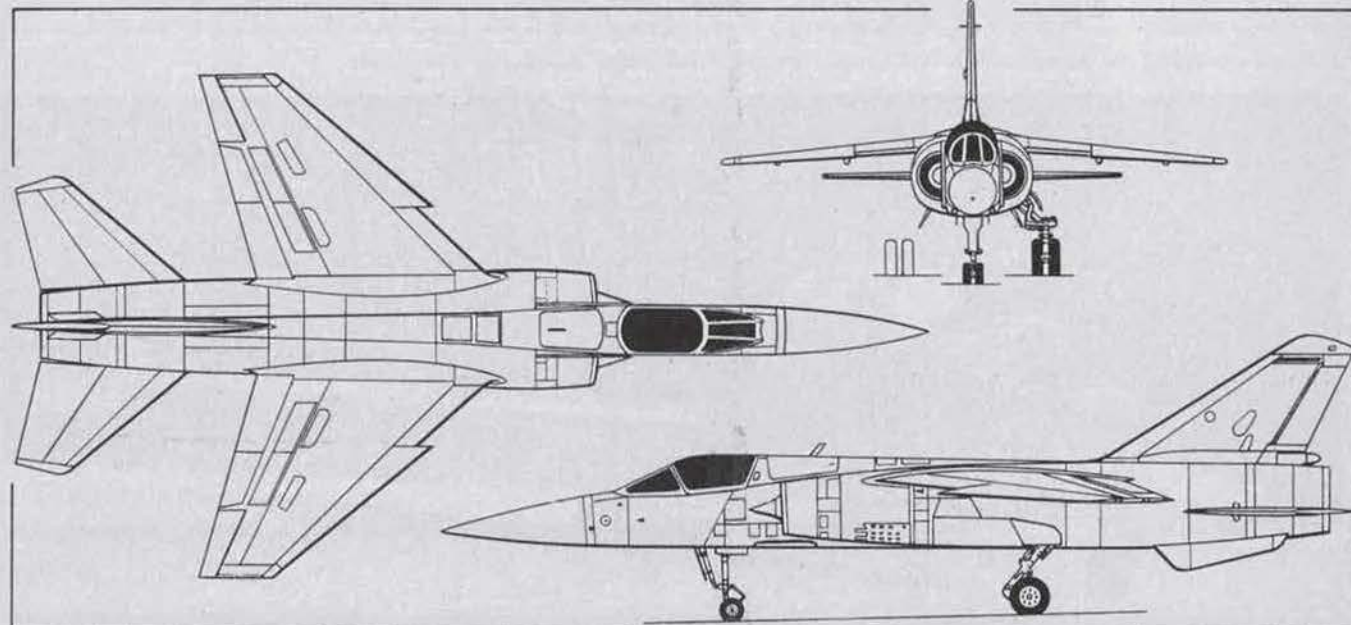
WEIGHTS:

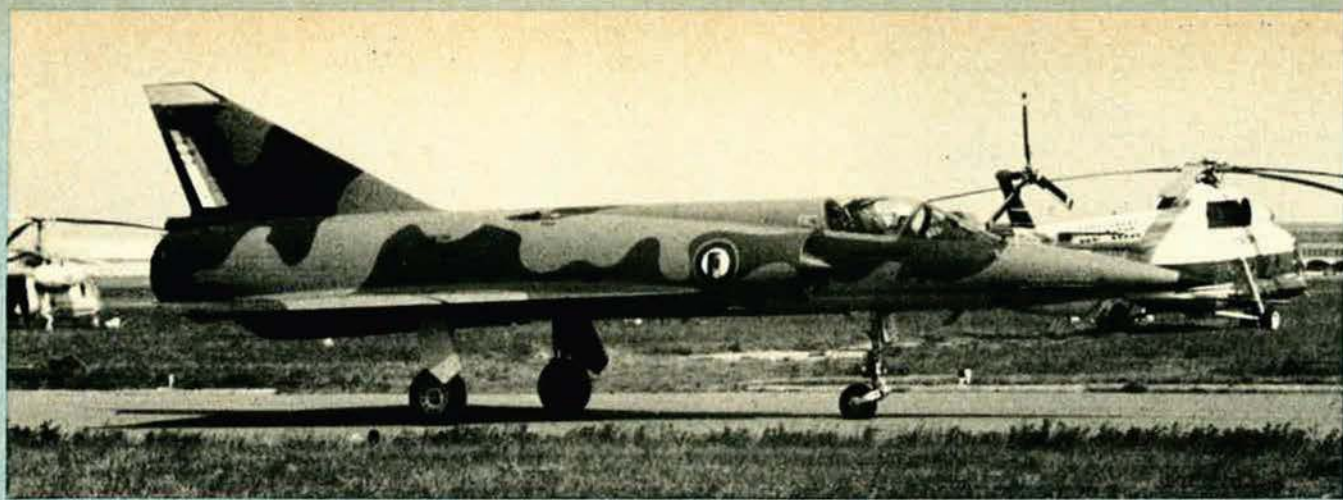
Weight empty, equipped, incl pilot 17,857 lb (8,100 kg)
T-O weight, clean 25,460 lb (11,550 kg)
Max T-O weight 34,280 lb (15,550 kg)

PERFORMANCE:

Design limit speed: Mach 2.2
at high altitude

Dassault Mirage F1-E, a more powerful version of the F1-Cs in first-line service with the French Air Force (Pilot Press)





Dassault Mirage 50, shown at the Paris Air Show, retains the basic airframe of the Mirage III/5 series, but is powered by the SNECMA Atar 9K-50 turbojet

at S/L Mach 1.2 (800 knots;
 920 mph; 1,480 km/h IAS)
Landing speed 127 knots (146 mph; 235 km/h)
Max rate of climb from S/L to Mach 2
and 33,000 ft (10,000 m)
 approx 59,000 ft (18,000 m)/min
T-O run, clean 1,640 ft (500 m)
Landing run, clean 1,970 ft (600 m)
Range with six bombs:
at low altitude
 400 nm (460 miles; 740 km)
hi-lo-hi 650 nm (750 miles; 1,200 km)

DASSAULT MIRAGE 50

Surprise addition to the range of Dassault fighters displayed at the Paris Air Show, in May-June of this year, was a prototype identified as the Mirage 50. This retains the basic airframe of the Mirage III/5 series, but is powered by the higher-rated SNECMA Atar 9K-50 turbojet, as fitted in the Mirage F1-Cs of the French Air Force. This gives 15,873 lb (7,200 kg) st with afterburning, representing a 16% thrust increase compared with the standard Mirage III/5.

The Mirage 50 is an all-purpose fighter, suitable for air superiority missions with guns and dogfight missiles, air patrol and supersonic interception, and ground attack

combined with good self-defence capability. It can carry the full range of operational stores, armament, and equipment developed for the Mirage III/5 series, and is available in reconnaissance configuration. A two-seat training version is also projected. Improvements compared with the lower-powered Mirages include better take-off performance, higher rate of climb, faster acceleration, and better manoeuvrability.

The prototype Mirage 50 was demonstrated originally as the Mirage Milan, with "moustache" foreplanes, as a contender for Swiss Air Force re-equipment contracts. The "moustaches" are not envisaged as normal equipment of the Mirage 50.

DIMENSIONS, EXTERNAL:

Wing span 27 ft 0 in (8.22 m)
Length overall 51 ft 0½ in (15.56 m)
Height overall 14 ft 9 in (4.50 m)

AREA:

Wings, gross 376.7 sq ft (35.00 m²)

WEIGHTS:

Ramp weight, clean 20,945 lb (9,500 kg)
Max T-O weight 29,760 lb (13,500 kg)

PERFORMANCE:

Max speed at altitude above Mach 2
 (750 knots; 863 mph; 1,390 km/h IAS)
T-O run 2,300 ft (700 m)
Range with max fuel
 675 nm (775 miles; 1,250 km)

AERMACCHI

AERONAUTICA MACCHI SpA; Head Office: Corso Vittorio Emanuele 15, Milan, Italy

AERMACCHI M.B. 339

In early 1975 the Italian Air Force authorised the manufacture of two flying prototypes of this tandem two-seat trainer/ground attack aircraft, which it plans to order in quantity as a successor to the M.B. 326s currently in service.

In addition, a ground test airframe will also be built.

The M.B. 339, of which a full-size engineering mockup was completed in 1974, is based essentially upon the airframe and Viper 632 power plant of the M.B. 326K (see 1974-75 *Jane's*), but with a remodelled forward fuselage, an improved two-seat cockpit, uprated avionics equipment, and other detail changes.

The general appearance of this aircraft can be seen in the accompanying three-view drawing (see opposite page).

The first M.B. 339 prototype is scheduled to fly during the first half of 1976, with deliveries of production aircraft following in 1977-78.

TYPE: Two-seat basic and advanced trainer and ground attack aircraft.

Full-scale mockup of the Aermacchi M.B. 339, showing the raised rear cockpit and underwing armament



AIRFRAME: Structurally derived from M.B. 326K, but with redesigned forward fuselage, increased vertical tail area, and larger ventral strake. Permanent wingtip tanks.

POWER PLANT: One Fiat-built Rolls-Royce Viper Mk 632-43 turbojet engine, rated at 4,000 lb (1,814 kg) st. Internal fuel capacity (fuselage and wingtip tanks) 306 Imp gallons (1,390 litres). Provision for two underwing drop-tanks, each of 72.5 Imp gallons (330 litres) capacity.

ACCOMMODATION: Crew of two in tandem, on Martin-Baker Mk 10 zero-zero ejection seats. Elevated rear seat. One-piece moulded Perspex canopy, opening sideways to starboard.

ELECTRONICS AND EQUIPMENT: Flight director system; main and standby UHF (optional VHF); AN/ARN-108 ILS with marker beacon; Marconi-Elliott AD 370B ADF; ANS 952 Tacan; AN/APX-77 IFF transponder.

ARMAMENT: Provision in underside of forward fuselage for a 7.62 mm GAU-2B/A multi-barrel machine-gun with 1,500 rds, or a 30 mm DEFA cannon with 120 rds, in a flush-fitting underfuselage pod. Ammunition for the GAU-2B/A is stowed internally, in a compartment which can also accept, as alternative packages, photo-reconnaissance equipment, special-mission avionics, a variable-stability system, or baggage. Provision for Aeritalia or gyroscopic Thomson-CSF gunsight and A8-110-3 electrically-controlled gun camera. Up to 3,500 lb (1,587 kg) of external stores can be carried on six underwing hardpoints, the inner four of which are stressed for loads of up to 1,000 lb (454 kg) each and the outer two for up to 750 lb (340 kg) each. Typical loads can include two AS.11 or AS.12 air-to-surface missiles; two AN/M-3 12.7 mm machine-gun pods on the inner stations, with 350 rds/gun; four 750 lb bombs or napalm containers; six 500 lb bombs; six Aero 3B practice bomb con-

tainers; six SUU-11A/A 7.62 mm minigun pods with 1,500 rds/gun; six Matra 155 launchers, each for eighteen 68 mm rockets; six Matra F-2 practice launchers, each for seven 68 mm rockets; six LAU-3/A launchers, each for nineteen 2.75 in rockets; six Simpres LR-25-0 launchers, each for twenty-five 50 mm rockets; six LAU-32 or LAU-39 rocket launchers; or two 72.5 Imp gallon (330 litre) drop-tanks.

DIMENSIONS, EXTERNAL:

Wing span over tip-tanks 35 ft 7 in (10.85 m)
 Length overall 36 ft 0 in (10.97 m)
 Height overall (static) 12 ft 10¼ in (3.92 m)
 Wheel track 8 ft 1¾ in (2.48 m)
 Wheelbase 15 ft 0¾ in (4.59 m)

AREA:

Wings, gross 207.74 sq ft (19.30 m²)

WEIGHTS:

Weight empty 6,768 lb (3,070 kg)
 T-O weight, clean 9,590 lb (4,350 kg)
 Max T-O weight, with external stores 12,500 lb (5,670 kg)

PERFORMANCE (estimated; clean aircraft except where stated):

EAS limit/Mach limit 500 knots/Mach 0.82
 Max level speed at S/L 485 knots (558 mph; 898 km/h)
 Max level speed at 30,000 ft (9,145 m) Mach 0.77 (441 knots; 508 mph; 817 km/h)
 Stalling speed, landing configuration 82 knots (94.5 mph; 152 km/h) CAS
 Max rate of climb at S/L 7,050 ft (2,150 m)/min
 Time to 30,000 ft (9,145 m) 6 min 40 sec
 Service ceiling (100 ft; 30.5 m/min rate of climb) 48,000 ft (14,630 m)
 T-O run 1,475 ft (450 m)
 T-O to 50 ft (15 m) 2,230 ft (680 m)
 Landing from 50 ft (15 m) 2,265 ft (690 m)

Landing run 1,215 ft (370 m)
 Max range (internal fuel) 950 nm (1,093 miles; 1,760 km)
 Max endurance (trainer) at 25,000 ft (7,620 m) 2 hr 40 min
 Max ferry range with two underwing drop-tanks, 10% reserves 1,140 nm (1,310 miles; 2,110 km)
 g limits:
 clean +8.0; -4.0
 with external stores +6.0; -3.0

ATLAS

ATLAS AIRCRAFT CORPORATION OF SOUTH AFRICA (PTY) LTD; Head Office and Works: PO Box 11, Atlas Road, Kempton Park 1620, Transvaal, South Africa

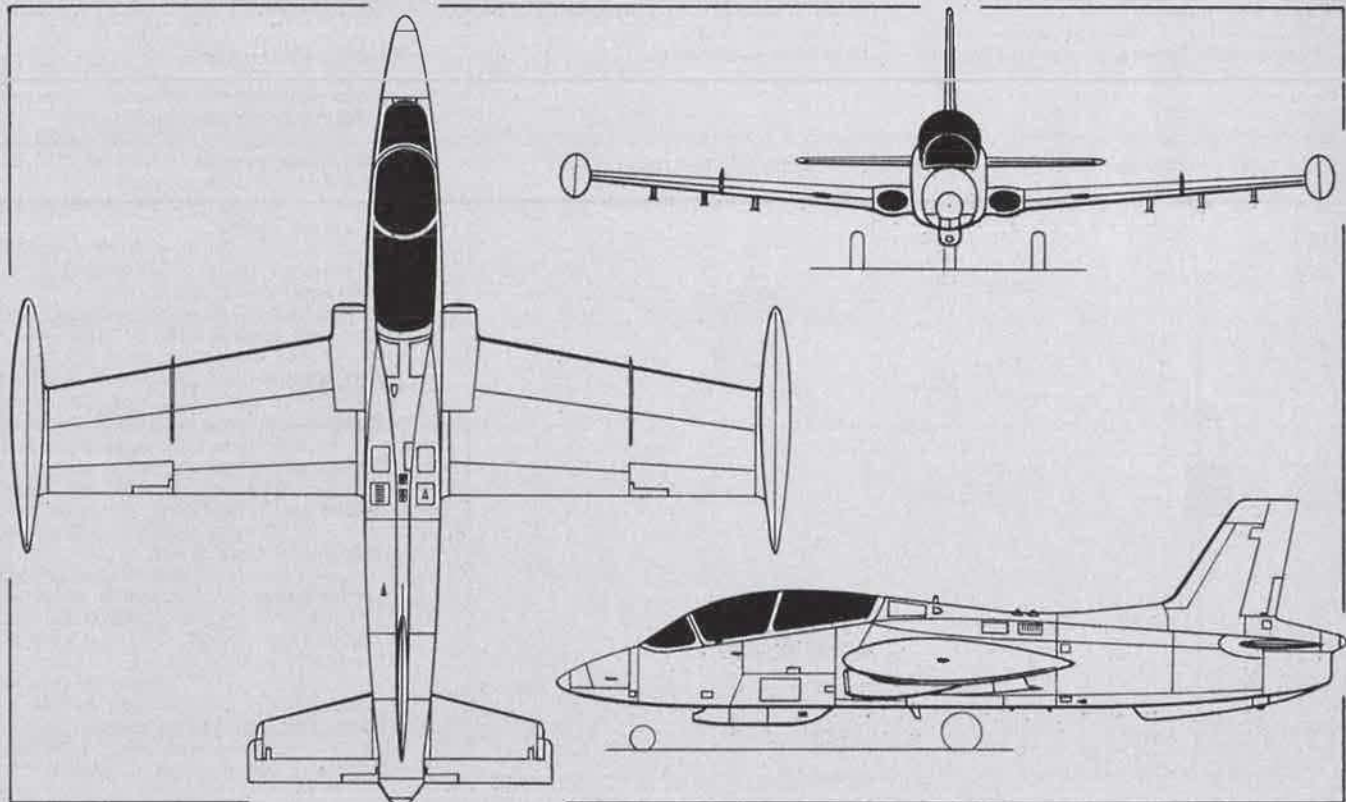
For some time past it has been reported that Atlas was to manufacture a new general-purpose aircraft in South Africa. It is now known that the aircraft concerned is the Atlas C4M STOL utility transport, all available details of which follow:

ATLAS C4M

The C4M is a six/eight-seat STOL utility light transport aircraft, developed and built by Atlas in South Africa. It can be converted rapidly from the passenger to the freight role, and vice versa, and can operate from unprepared surfaces. The prototype (ZS-IZF) flew for the first time in 1974, and was expected to receive civil certification during 1975.

TYPE: Single-engined cabin monoplane.
WINGS: High-wing monoplane, with single bracing strut on each side. Wing section NACA 23016 at root, NACA 4412 (modified) at tip. Dihedral 3°. Incidence 4° at root, 0° 27' at tip. All-metal torsion-box structure. Electrically-operated Fowler flaps, of all-metal two-spar construction, interchangeable right with left. All-metal piano-hinged ailerons, with inset tabs.

Aermacchi M.B. 339 basic and advanced trainer and strike-reconnaissance aircraft (Pilot Press)





First prototype of the Atlas C4M (340 hp Lycoming GSO-480-B1B3 engine)

FUSELAGE: All-metal stressed-skin structure, of basically rectangular section.

TAIL UNIT: Cantilever all-metal structure. Electrically-operated variable-incidence tailplane. Servo tabs in elevators.

LANDING GEAR: Non-retractable tailwheel type. Main units each have an independent cantilever leg, and are connected to oleo-pneumatic shock-absorbers mounted below cabin floor level in small underfuselage blister fairings. Main-wheel tyres size 7.00-8, 6 ply rating. Single-disc hydraulic brakes. Tailwheel, mounted in a castoring fork which incorporates a shock-absorber, has a size 5.00-4 6 ply tyre.

POWER PLANT: One 340 hp Piaggio-built Lycoming GSO-480-B1B3 six-cylinder horizontally-opposed aircooled engine, driving a Hartzell HC-B3R20-4 three-blade constant-speed metal propeller with spinner. Three removable bag-type fuel tanks in each wing, total capacity 95 Imp gallons (432 litres).

ACCOMMODATION: Enclosed cabin, seating six to eight persons in standard version. Pilot and co-pilot side by side at front,

with four individual seats in pairs at rear, or two bench seats each for three persons. Passenger seats can be removed to provide space for up to 1,235 lb (560 kg) of cargo. Heating and ventilation standard. Forward-hinged door on each side for pilot and co-pilot. Main cabin door is on port side, and is in two sections: forward-opening front section for passengers and light cargo, and rearward-opening rear section to supplement this when loading bulky cargo.

SYSTEMS: Hydraulic system for main-wheel brakes only. 28V DC electrical system supplied by an engine-driven generator and a 24V 11Ah battery.

ELECTRONICS AND EQUIPMENT: Standard equipment includes instruments, anti-collision beacon, and cabin, navigation, and landing lights. Advanced instrumentation and electronic equipment to customer's specification, including duplicated VHF transceivers, intercom, HF transceiver, and ADF.

DIMENSIONS, EXTERNAL:

Wing span 42 ft 8 in (13.005 m)

Wing chord at root 5 ft 8 in (1.73 m)
Wing chord at tip 3 ft 10 in (1.17 m)
Wing aspect ratio 8.07
Length overall (tail up) 29 ft 8 in (9.04 m)

Height overall:

tail up 14 ft 0½ in (4.28 m)
tail down 9 ft 0 in (2.74 m)
Tailplane span 15 ft 8½ in (4.79 m)
Wheel track (aircraft unladen) 8 ft 9½ in (2.68 m)
Wheelbase 21 ft 8¼ in (6.61 m)
Propeller diameter 8 ft 4 in (2.54 m)
Propeller ground clearance 9 in (0.23 m)

AREAS:

Wings, gross 225.1 sq ft (20.91 m²)
Ailerons (total) 28.19 sq ft (2.62 m²)
Trailing-edge flaps (total) 40.62 sq ft (3.77 m²)
Vertical tail surfaces (total) 27.65 sq ft (2.57 m²)
Horizontal tail surfaces (total) 59.00 sq ft (5.48 m²)

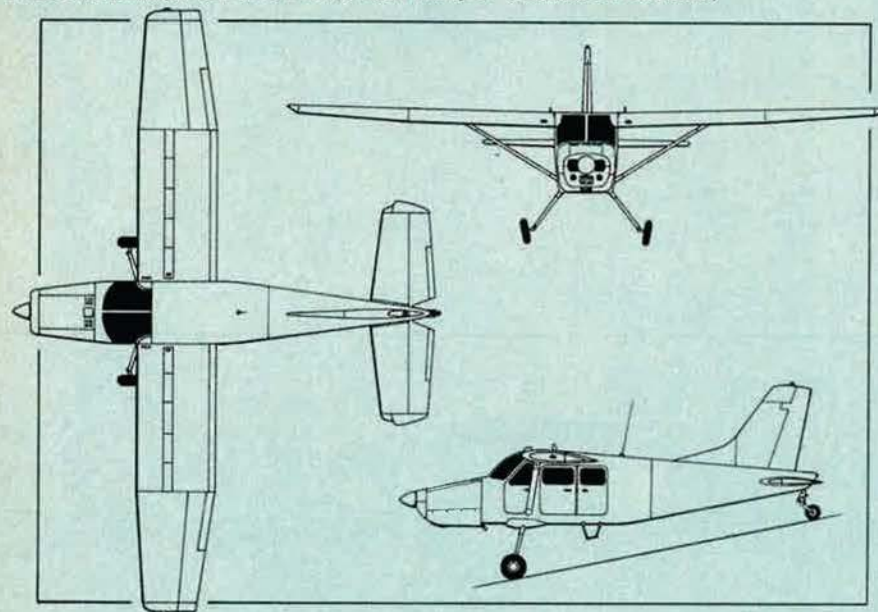
WEIGHTS AND LOADING:

Weight empty 2,646 lb (1,200 kg)
Basic operating weight empty (equipped for five passengers plus baggage) 3,194 lb (1,448 kg)
Max cargo payload 1,235 lb (560 kg)
Max T-O and landing weight 4,500 lb (2,041 kg)
Max wing loading 20 lb/sq ft (97.6 kg/m²)

PERFORMANCE (at max T-O weight):

Max never-exceed speed 160 knots (184 mph; 296 km/h) CAS
Max level speed at 8,000 ft (2,440 m) 140 knots (161 mph; 259 km/h)
Max cruising speed at 10,000 ft (3,050 m) 125 knots (144 mph; 232 km/h)
Econ cruising speed at 10,000 ft (3,050 m) 105 knots (121 mph; 195 km/h)
Stalling speed, flaps up, power on 65 knots (75 mph; 121 km/h)
Stalling speed, flaps down, power on 48 knots (55.5 mph; 89 km/h)
Max rate of climb at S/L 800 ft (244 m)/min
Service ceiling 19,000 ft (5,790 m)
T-O run 705 ft (215 m)
T-O to 50 ft (15 m) 1,214 ft (370 m)
Landing from 50 ft (15 m) 853 ft (260 m)
Landing run 460 ft (140 m)
Range with max fuel, no reserves 700 nm (806 miles; 1,297 km)
Endurance with max fuel, no reserves 7 hr

Atlas C4M six/eight-seat STOL utility light transport (Michael A. Badrocke)



What is it like to penetrate the eye of a hurricane? The author reports on a mission in an Air Weather Service WC-130, equipped with the latest weather recce gear . . .

into hurricane carmen's eye

BY WILLIAM A. MCLAUGHLIN, JR.

AT NOON on Friday, September 6, 1974, Hurricane Carmen is 375 miles south of New Orleans and bearing down on the Gulf coast. National Hurricane Center (NHC) in Miami has posted a hurricane watch for the coastal area between Panama City, Fla., and Port Arthur, Tex. As the storm approaches within forty-eight hours of landfall, Air Force "Hurricane Hunters" of the 53d Weather Reconnaissance Squadron at Keesler AFB, Miss., and Navy weather aircraft from NAS Jacksonville step up their surveillance and obtain fixes on Carmen's position at three-hour intervals.

On a New Orleans television station, a weatherman points out a high-pressure ridge advancing eastward across the country and forecasts that Carmen will turn from its present northerly course and come ashore in the Mobile-Pensacola region.

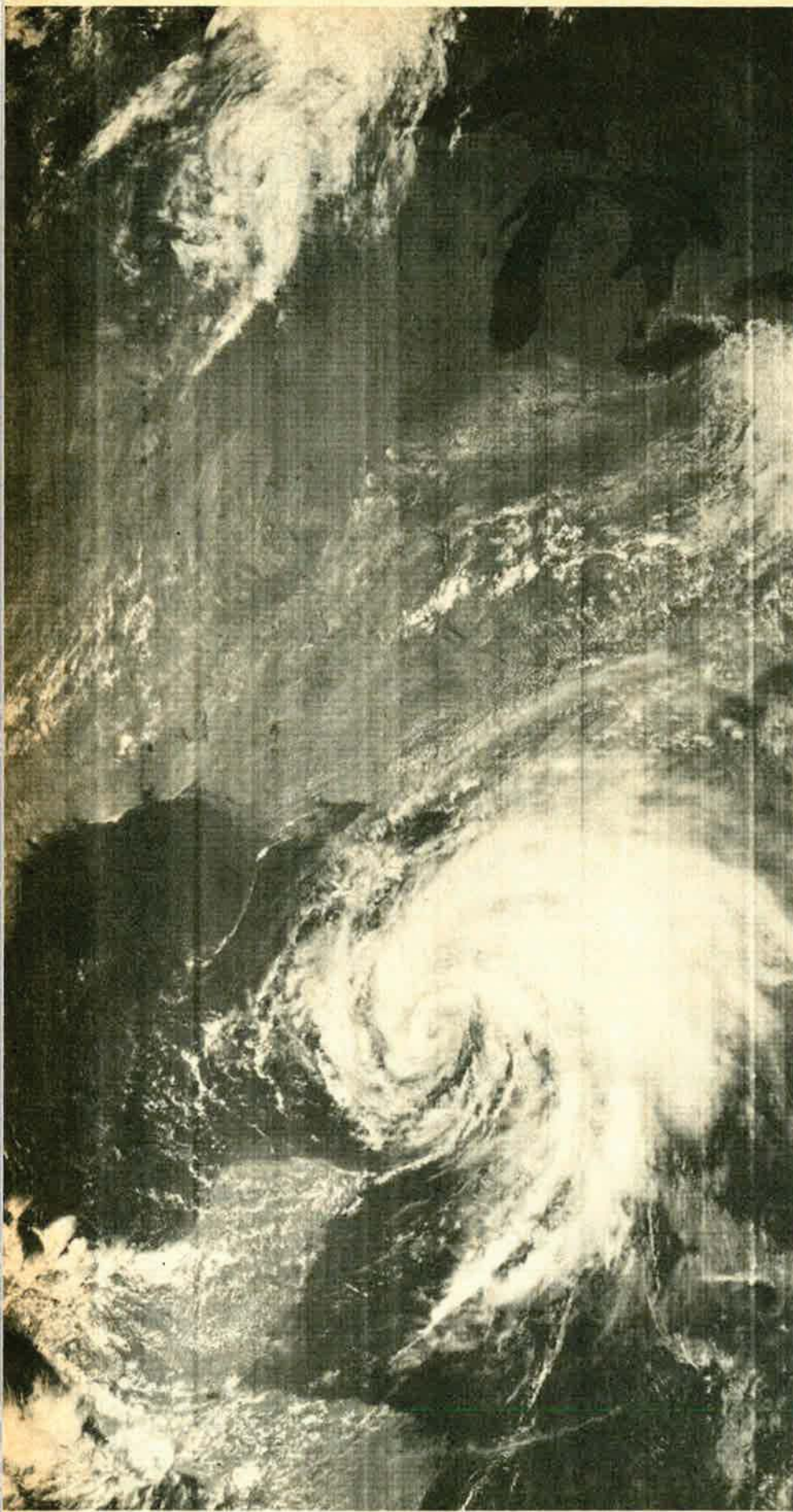
Shortly after 1700 hours, a flight

crew from the 53d arrives at Gulfport Municipal Airport and boards a Military Airlift Command WC-130B Hercules, Serial No. 23492. Though outwardly it resembles other reconnaissance aircraft in MAC's Air Weather Service (AWS) inventory, this one is unique. It is equipped with the prototype Airborne Weather Reconnaissance System (AWRS) that makes it a complete, computerized weather sampling and analysis station, capable of measuring and reporting in real time all atmospheric conditions it encounters. As an observer for the AWRS contractor, Kaman Aerospace Corp., I am privileged to go along on this, its first mission into a full-blown Atlantic hurricane.

On the flight deck, I join Capt. Robert Packer, the pilot/aircraft commander; Capt. Frank Tetreault, copilot; Maj. Thomas Roll, navigator; and TSgt. Gerald Garland, flight engineer. In a compartment

This rugged, reliable WC-130B, equipped with the Kaman prototype computerized Airborne Weather Reconnaissance System, brought back more data than any previous hurricane mission.





immediately behind the flight deck, at the nerve center of the AWRS, Maj. Lawrence O'Shea, the aerial reconnaissance weather officer (ARWO), sits at a control console surrounded by instrument panels. Aft, at another console, are the weather observer-dropsonde operator, TSgt. Charles Hart, and meteorological equipment technician SSgt. Patrick Gallegly.

All 53d Weather Recon Squadron missions are "Gull" flights, and our radio call sign is "Gull 99." At the NHC, our mission will be identified as "Gull Eight-Carmen," the eighth Air Force mission into the storm. We will relieve a Navy patrol aircraft on the scene.

Our job is to measure and record Carmen's forces, to fix its position, and track its movement. We will be airborne nine hours. During that time, we will be responsible for three fixes on Carmen's position. We will gather precise meteorological data on the hurricane's windfield, the heights and types of its eyewall clouds, its rainbands, and the amount of moisture they contain, taking barometric pressure and temperature readings in a crisscross pattern with 160-mile-long legs through Carmen's center.

All this information, with the meteorologist's observations, will be relayed by high-frequency radio-teletype to MacDill AFB, Fla., and then by land teletype to NHC.

Penetration Altitude 10,000

The Gulfport controller clears Gull 99 as filed, through two offshore corridors in the Aircraft Defense Identification Zone, with a final navigation fix on the Grand Isle beacon, then southward into the Gulf. We take off in hazy sunshine and begin the climb to the assigned 18,000-foot cruising altitude.

"Call Houston Center now, and have a nice flight," is Gulfport's parting word on the radio; and I think how nice can a flight into a hurricane be?

As we cross the Mississippi coast,

A remarkable satellite photo of Hurricane Agnes (1972) shows what these gigantic storms look like from orbit. Here, Agnes measures 1,000 miles from north to south.

offshore islands pop suddenly in view, illuminated like a spotlight with our changing angle on the sun. Gray, misty outlines, irregular shapes against the grayer water. Major O'Shea checks in with MacDill on the HF and transmits a coded test message that goes out in a high-speed flurry of electric bleeps. This is a critical link, for the alternative is a longer, more roundabout communications route through Albrook AFB in the Canal Zone.

Climbing into the brighter sunshine, we see patches of blue through thin cloud, and the surface is lost below in thickening haze. On the instrument panel, a needle rotates, registering passage of the Grand Isle beacon. Gull 99 banks left onto a southerly heading, deeper into the Gulf and climbing.

A line of cloud appears on the horizon ahead, thickening and ominously expanding in size and deepening in color as the flight presses on. "I suppose that cloud formation is part of Carmen," muses Captain Packer. There is a noticeable slack in the light, informal banter that earlier crackled in the intercom headset.

Over a shelf of cloud now, and heading toward the darkest part of the storm, directly ahead and at lower altitude. The cloud structure fills in below. Pinnacles reach upward, but short of Gull 99's cruising level.

On the illuminated instrument panel above navigator Tom Roll, the command display responds to button pushes with digital readouts of a variety of meteorological information: twenty-two different weather parameters flash numerically, updating the visual display once each second. Wind direction and ground track in degrees; wind speed, true airspeed, and ground speed in knots; pressure altitude and true static pressure in millibars; true air temperature in degrees Celsius; relative humidity in percentages; air density in kilograms per cubic meter—information taken from sensors that sample the atmosphere and measure aircraft motion. All these data and more are channeled into the computers, where they are then displayed on the digital readouts at three positions in the aircraft, recorded on paper by a medium-

speed printer, and preserved on magnetic tape—thus providing a second-by-second data history of the flight.

Gull 99 also has one of the world's most accurate navigation systems—integrated inertial-Omega, backed up by LORAN, Doppler, and conventional dead reckoning, plus its own dedicated computer system. When the low-frequency Omega network is fully operational, the system will be able to determine position anywhere in the world within two nautical miles.

1830 hours: Into the gathering darkness, the cloud thick gray below, the gloom rising into the lighter sky. Time passes swiftly as the aircraft drones on. It is warm and noisy inside. The pilot adjusts the brightness of the weather radar-scope on the instrument panel. The yellow cursor sweeps the dial like an accelerated second-hand on a wristwatch, illuminating the vertical course line and denser cloud cells.

It's nearly time to descend to the 10,000-foot altitude at which we will penetrate the storm and conduct all of our reconnaissance. This corresponds to the 700-millibar pressure level on which many other meteorological measurements are based.

Captain Tetreault calls Houston Center: "Houston, Gull Niner Niner. We'll be starting down shortly."

Houston comes back badly garbled. Tetreault raises a private light aircraft on the frequency, and the pilot relays our message and forwards Houston's clearance for our descent.

From now on, we'll be out of direct contact with the air traffic controller—our slender link with the outside world over the ultra high frequency (UHF) channel and emergency guard frequencies. No other aircraft is likely to be in our operating area at our altitude. International traffic is crossing the Gulf in clear air and comfort far above.

Into the Eye

1859 hours: Power back and the aircraft rocks and settles noticeably as we descend into thickening cloud and growing darkness. The altimeter needle moves counterclockwise around its dial. Through light gray wisps of cloud on top, then out the other side into narrow cloud valleys,

then in again for a longer period, accompanied by successively heavier jolts of turbulence. Finally, all outside visibility is lost, and it's a gray world.

Down through dense cloud, rain-drops on the windscreen turn into rivulets, then torrents. As the gauges unwind, the instruments alone provide clues to our relationship with the outside world, confirming that we are right side up, wings level, on course, descending. Through black cloud now, rain beats a crescendo on the windscreen. Down through an icing level, we meet hail that sounds as though it will grind the aircraft to bits. The pilots feel the deicer heat on the windscreen, and the hail is soon past.

Leveling now, fine adjustments on the throttles, pitch, and trim switches and the gauges steady out. Eyes on the pale green radarscope, with the yellow cursor painting bands of lighter color, like fog, changing shapes, appearing and disappearing, taking form and substance, then vanishing.

Engines throb quietly. Transitory static in the headset; voices of the crew hushed, almost reverent, as they pass necessary information. And on the electronic consoles, the digits flash and continue their constant change.

Navigator Roll, working with chart and computers, occasionally punches numbers into his navigation computer, notes the printout in his worksheets, and calls course changes to the pilot.

"Steer 257 degrees. Make it 265. Look at the winds," he says.

A 110-knot crosswind registers on the display. A shudder runs through the aircraft, passes, and is followed by another, more solid bump.

"Steer 270," says Roll quietly.

It's possible to get up and walk around during all but the heaviest turbulence, "but always have something solid to grab onto," cautions the flight engineer.

1926 hours: Position 24°42' north latitude, 90°20' west longitude. We have our first fix on Carmen's center vortex, almost without knowing we were there. The wind has led us to the center. As we crossed Carmen's windfield and penetrated the eyewall cloud, the wind built up

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steadily off our left wing. By maneuvering, we cross the stream of maximum wind at right angles and watch the wind speed fall off dramatically as we enter the relatively calm eye. Out of cloud, then in again. Then in between layers of cloud and there is some visibility outside. Below, a double row of cloud with open water between curls off the left side and behind. There are flecks of white in the open space—light cloud or wind-whipped waves? We cannot tell. A fleeting rattle of heavy rain on the windscreen.

"The last Navy plane reported a shallow, crescent-shaped eyewall cloud, with the open side facing north. Could that have been it?" Packer asks. "Could have been," says O'Shea.

Roll, reading his instruments, calculates the eye has moved a little west of the last position reported by the Navy aircraft. We circle left, trying unsuccessfully to relocate the double row of cloud. The radar-scope shows circular cloud all around; the eye is about twenty miles in diameter. Darkness is closing in and visibility is marginal. Turning southwest, we punch back through the eyewall and continue the mission. O'Shea files a vortex report to MacDill on HF.

We follow the flight plan for an Alpha pattern reconnaissance. This is an elongated X, each leg eighty miles from the center, the tips joined by wide arcs. The data flow into the computers and to the displays.

Southwest, the clouds level out. We are above most of them, though some towering cumulus peaks billow above. And through these peaks we see a brilliant sunset—a horizontal band of bright yellow, tapering off to deeper vermilion, sharply outlining the clouds. Above are patches of royal blue. The fading light filtering through the clouds creates eerie effects that are soon gone.

A half hour out, we reverse course and head back toward the

storm center as the crewmen aft prepare a sonde drop. The dropsonde is an eighteen-inch-long cylinder containing sensors that measure temperature, pressure, and humidity; a converter to encode the information into electronic signals; and a transmitter to relay the information to a receiver in the aircraft, where it is recorded on magnetic tape, printed on paper, and automatically entered in the computer.

Lightning flickers ahead in the clouds, rapidly intensifying. The flashes become practically continuous, illuminating the billowing clouds.

Dropsonde Away

Coordinating with the ARWO, Sergeants Hart and Gallegly activate the dispenser and announce the dropsonde is away. It sends rapid coded signals, recorded on the paper spewing from the printer, quickly filling a tray. It takes about four minutes for the sonde, falling by parachute into heavy winds, to impact the surface, when its signals abruptly cease.

"Good data," says the ARWO after studying the printout. Rapidly typing at his computer keyboard, he readies another coded report for MacDill. A switch is thrown, and the message is transformed into perforated tape at Sergeant Hart's position. Placed in the HF teletype transmitter, it goes over the radio in a stream of bleeps.

Minutes later, MacDill is on the radio, announcing a telephone patch with the Chief, Aerial Reconnaissance Coordination, All Hurricanes (CARCAH), at the National Hurricane Center in Miami.

CARCAH questions the omission of a pressure altitude reading from the vortex report. "We're interested in pressure heights; we've got to get a pressure altitude," says CARCAH.

O'Shea has reported a balky radar altimeter, a critical instrument in determining height above surface, one on which many other measurements rely. (In the low-pressure storm center, barometric pressure altimeters are unreliable and subject to considerable error.)

"The radar altimeter was intermittently unstable. But it's steadied out now," explains the ARWO.

CARCAH has a terse reply: "If

your pressure reading isn't reliable, we'll have to launch another aircraft. We've got to have pressure heights."

"CARCAH, Gull Niner Niner. I think we're going to be okay. The radar altimeter is now functioning normally. I think it'll hold out."

"Roger, Gull 99. But at the first indication of failure, advise CARCAH out." MacDill broke the patch and the radio was again quiet.

O'Shea, bathed in perspiration in his warm compartment, studied the fluctuating needle on the radar altimeter, rapped it with his knuckle. The needle spun around the dial as he pushed the "calibrate" button to check its operation. Released, the needle spun again and steadied on 10,100 feet—a meaningful reading.

Lightning ahead, black outside. Total darkness now. The flashes flicker in the clouds. Raindrops on the plexiglass observation bubbles glow with static electricity, fluorescent. In the propeller arc of the No. 2 engine, close outside the blister window, St. Elmo's fire gleams.

Two particularly close but soundless flashes brighten the interior of the aircraft. The pilot calls for a radio check and studies the instruments closely. No malfunctions are observed.

Through the eyewall the second time, the winds build steadily from the west, opposite from our first penetration. They are recorded on the command display, in the computer, on magnetic tape, and on the printer. Peak winds to ninety knots, dropping rapidly to one knot with zero drift as we reach the center and get our second fix. Another dropsonde is launched.

2013 hours: Position 24°48' north, 90°16' west. Carmen has moved about ten miles since our last fix. We continue on a northeasterly course, out eighty miles, another half hour. On the outer fringes of the storm, the weather settles down. The crew breaks out box lunches. I am pleasantly surprised that my appetite tells me the airsick bag offered by the flight engineer will not be needed.

Except for fleeting moments, turbulence has not been what I expected. I remember a horror story about one of these reconnaissance aircraft rolling inverted in heavy winds, and of others bouncing off

eyewall clouds. This storm, at least, has not been like that. I recall the words of a veteran hurricane hunter: "All storms are different. Sometimes it's smooth as glass at 10,000 feet. Other times, you've got to sit strapped in and holding on for dear life. When it gets so bad that the safety of the aircraft and crew is compromised, we get out. We don't do anything to endanger life. Air Weather Service has one of the best safety records."

We circle far to the west of Carmen's center and approach again from the south. At 2144 hours, we have our third vortex fix: 24°56' north, 90°9' west. Carmen is continuing its relentless movement north. During this pass, we record Carmen's fiercest winds—125 knots—in a narrow band ten miles north-east of the center.

Final Fix—And Home

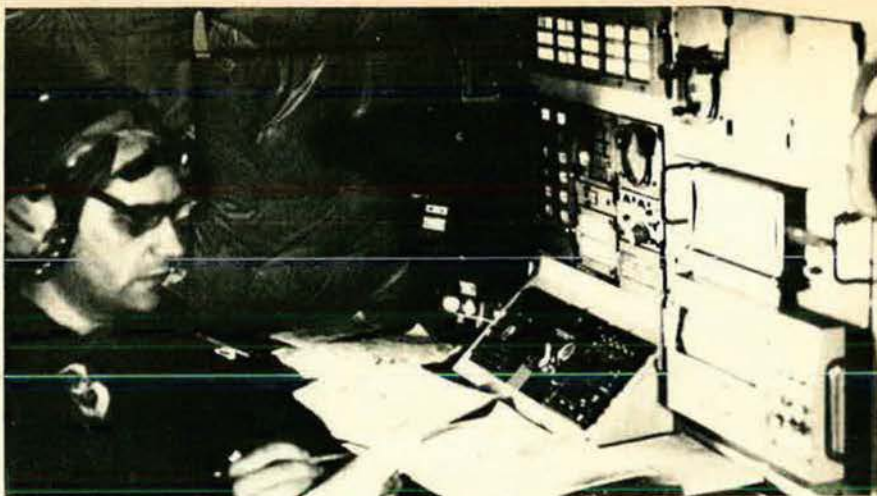
Weariness is apparent after the sixth hour. Monotony, heat, aircraft noise, vibrations and groans from the fuselage, the steady motion, whine of the engines, pressure to produce—all take their toll. The flight drones on.

2345 hours: Position 25°18' north, 90°57' west. Heading 091 degrees, ground track 102.7 degrees, wind direction 033.6 degrees; wind speed variable forty to seventy knots. We are headed back toward the center for our final fix. Punching through fluctuations in Carmen's windfield, the aircraft yaws sharply with short, violent motions. Lightning flashes ahead.

The radarscope shows a circular cloud formation ten miles out. We penetrate the center vortex, and the scope shows solid cloud all around. Carmen's eye is nearly circular. The winds fall from ninety knots to near zero. We launch another sonde.

0002 hours, Saturday, September 7: We have our final fix at position 25°32' north, 90°21' west. Carmen's center has moved some thirty miles north of its last position. Its forward speed has nearly doubled. At this rate, it will strike the Gulf coast sooner than expected. There is no evidence of the eastward turn forecast by the television weatherman. In fact, Carmen shows a tendency to move slightly west.

CARCAH is soon asking for confirmation of the last vortex report.



Aerial Weather Reconnaissance Officer Maj. Lawrence O'Shea mans the AWRS console as Gulf 99 prepares to penetrate Hurricane Carmen.

"It looks as though the storm has moved considerably north. Can you verify your accuracy?" asks CARCAH.

Roll is on the intercom with O'Shea. "Tell him I confirmed the inertial with LORAN, and I'll guarantee the vortex fix within five miles, and probably two to three miles," Roll says. Later analysis of the recorded wind data showed Gull 99 pinpointed the absolute center of Carmen's wind eye within a half mile.

The ARWO radios his final report and summary, running an alphabetized list containing the key information that goes into NHC's next hurricane advisory.

"Gull Niner Niner, CARCAH. Looks like an excellent mission."

"Thanks, CARCAH. Gull 99 out."

"Your heading is 360. We're going home," Roll tells Packer.

Flight Engineer Garland calculates fuel consumption, aircraft weight, and fuel remaining. We have the required reserve for our destination, Little Rock AFB, Ark., and our alternate. While we've been airborne, military bases along the Gulf have been evacuated, their aircraft flown inland to escape Carmen's reach.

Climb power is set for our 24,000-foot exit altitude. Another Air Force aircraft is already en route to continue Carmen's surveillance.

Clearing skies reveal city lights as we cross the coast, and in two hours we're on the approach to

Little Rock and descending steadily.

The parking area is crammed with aircraft from bases that have been evacuated, and Keesler personnel rush aboard as we shut down. There is excited conversation about the emergency, about the mission, about the evacuation, and families left behind in the vulnerable coastal area.

A half hour later, at 0300 hours, on the basis of Gull 99's reconnaissance, National Hurricane Center issued a hurricane warning for the New Orleans and southwestern Louisiana area. The storm began coming ashore at 1700 hours. Carmen's eye crossed the coast in the vicinity of Houma, bringing heavy rain and 125 mph winds that severely damaged much of the sugar cane crop.

At about the time Carmen made its landfall, Gull 99 was again airborne in the storm center with a new flight crew. Launched as a "special" mission, it relieved the primary reconnaissance aircraft that had returned to base with a mechanical problem.

These two Carmen missions by the AWRS aircraft generated more hard data and information on the structure of a tropical cyclone than had ever before been available.

With better understanding of the internal structure and forces of tropical storms, scientists will be able to devise more reliable computer models of these storms, to increase the accuracy and reliability of hurricane prediction and forecasting. ■

The Secretary-General of NATO discusses the continuing shift of Warsaw Pact forces toward an offensive posture, and a range of Alliance issues raised frequently by US critics of NATO. He concludes that the Alliance provides each of its members, the US no less than the others, "far more than any of us individually can pay for in total defense."

NATO-

A Personal View

BY DR. JOSEPH LUNS
SECRETARY-GENERAL,
NORTH ATLANTIC TREATY ORGANIZATION

THE Editors of AIR FORCE Magazine have asked me to respond to a number of points concerning the North Atlantic Treaty Organization. This I am pleased to do. However, I should like first to make a few remarks of my own that seem important in order to set the background for my answers.

Recent events in Southeast Asia, continuing instability in the Middle East, events in Cyprus, developments in Portugal, economic pressures, problems of energy supply, and many other factors are creating uncertainty in the West. A recent Harris Poll in the US shows that although the overwhelming majority of the American people still supports a strong defense system, only a shockingly low number (thirty-nine percent) would support US military intervention if Europe were invaded. Very likely, this is the transitory reaction of a great nation whose people have simply suffered too many repeated shocks in recent years, and who desperately need time to get oriented. We in Europe understand this.

At times like these we do tend—and understandably so—to dwell on our mistakes and liabilities. However, it is also helpful, perhaps, to take a new inventory of our assets. We need to reexamine the foundations on which the Alliance rests.

The first point we must be clear on is this: We are operating a deterrent strategy; that is, we are not planning to win the next war, though we are certainly not to lose it, if it should happen. But the main object of our military preparedness is to convince any power or group

of powers that might be considering making an attack upon the Alliance (or any one of its members) that the risks they would run in this process would far outweigh any gains they might hope to achieve. We do not, therefore, have to match the other side man for man, tank for tank, and gun for gun. But we do have to maintain a solid and stalwart set of defenses in the forward areas to demonstrate to the other side that there are no easy gains that can be obtained without fighting for them, and that fighting for them might involve the use of nuclear weapons.

In strategic and tactical nuclear weapons, the Alliance has full confidence in the technological ability and political willingness of the nuclear powers to provide the Alliance with the nuclear capabilities required to sustain this deterrent strategy. But, in an era of approximate nuclear parity, nuclear weapons are not enough in themselves. We need strong and well-equipped conventional forces, and these must be provided by all the members of the Alliance. The security of NATO depends upon the interlocking triad of strategic, tactical nuclear, and conventional forces. But above all it depends upon the solidarity of the Alliance: the concept, which is not only a concept but a reality, that an attack upon one is an attack upon all.

In the twenty-six years the NATO Alliance has been in existence, this strategy has been developed to a point where the Soviet Union has come to realize that they have no way of assuring a successful direct military invasion of Western Europe without running risks for the

future of their own country—risks it is inconceivable they would accept. This means in turn that there is no way in which the Soviet Union can use its military power to exert pressure on member governments of the Alliance, in the same way they have dominated their subordinate partners in the Warsaw Pact since the early fifties. But this situation must not be taken for granted. Our security is only assured because of the efforts we have devoted to our military preparedness in the past and because the unity of the Alliance is both assured and visible. If our defenses were to crumble or our solidarity be in doubt, then at some point in the future the Soviets might be tempted to use their military power for political and even for strategic ends against the Alliance.

There is no reason why these military efforts should not continue, or indeed increase. The industrial and economic strength of NATO members is more than double that of the Warsaw Pact; the combined gross national product of the Atlantic community exceeds \$2 trillion a year—an average of more than \$4,000 per person. More important than the dollar figure is the mass of technology and applied science represented here. For example, the community's computer and automatic data processing systems far exceed in number and capacity those of the Pact area, giving the West a constantly accelerating technical problem-solving advantage. Thus, the achievement of an adequate conventional defense is well within our grasp.

Meanwhile, we cannot ignore the continuing momentum of the Soviets' military buildup. Their strategic missile forces are being equipped with more sophisticated and powerful missiles within the numerical limits agreed in SALT. They already have a three-to-one advantage over NATO in main battle tanks in the Central Region (and a tank is perhaps one of the weapons in a country's armory most needed for attack), and military analysts are deeply disturbed by the steady and substantial increase in equipment and firepower in each Warsaw Pact division—an increase that has continued since the start of the Mutual Balanced Force Reduction (MBFR) talks two years ago. Most NATO nations are reequipping themselves with new types of aircraft, but so is the Warsaw Pact, and at a rather faster rate, and a worrisome feature of their reequipment is the way in which their air forces are transferring the emphasis from air defenses to offensive capabilities. They also enjoy a numerical superiority of two to one in aircraft in the Central Region.

Perhaps the most striking aspect of the Soviet military effort over the last decade, however, has been the buildup of the Soviet Navy, from a small coastal force to the second largest high-seas navy in the world, with the largest submarine component. This particular part of their armory can scarcely be justified by the need to

protect Russia and her allies from invasion by the West.

There are many things that must continue to disturb us militarily, even—or perhaps especially—in a period of seeking détente. The military machine imposed on the people of the Soviet Union and Eastern Europe is judged by Western defense experts to be more than twice that required for an adequate defense of the Pact area. Its equipment and tactical doctrines are oriented to offensive operations, whereas NATO equipment and tactical doctrines are patently defense-oriented.

What I am trying to convey is that even with our formidable defensive capabilities, and in the midst of commendable efforts to achieve détente, we in the West have a right to be concerned—more, an obligation to be concerned—if the evidence of Soviet intentions continues to pile up to indicate a global pattern of ongoing military/political offensive, rather than defensive, orientation. When all is said and done, that is the core of the problem.

When both sides truly go on the defensive, we will have started down the long, winding road to détente, disarmament, and world peace.

Now, to return to the questions posed by the Editors:

Purpose of US Membership in NATO

The purpose of United States membership in NATO is to defend the United States and essential US interests, which include the freedom of the Western world as a whole. And to do so at an acceptable cost. It is as simple as that. The purpose of Norwegian membership is just the same, reading "Norway" for the "United States." Each member is primarily concerned with its own national defense and its own national interests. It is the common interest of each that formed an Alliance to defend all. We are pleased to know that there are so many people in the United States who also believe in defending Europe for reasons of old friendships, and so forth, but let us not confuse ourselves; the US is in NATO to defend the US. A clear understanding of this point may make the decision-making process a little less agonizing.

No NATO country could conceivably defend itself alone against an attack from the East. Even if one concludes that the US, still the most powerful nation in the world, could do so, the cost to the American taxpayers would be astronomically high. Moreover, if the US were on its own, the front line could well become the shores of the US—not a comfortable thought for Americans.

Through an Alliance, the members of the Atlantic community are able to do together what most of them could not do separately. In dividing the labor, so to speak, we also divide the cost.

In the case of the US, for example, a contri-

Prior to his appointment as Secretary-General of the North Atlantic Treaty Organization in 1971, Dr. Joseph Luns served for fourteen years in The Netherlands Foreign Service. He has been a member of the Dutch Parliament and was Minister of Foreign Affairs until assuming his present position. Dr. Luns is the author of several studies on naval and international affairs and has been honored for his work on behalf of European unification and in the field of international law.

tribution is made of some five divisions assigned to the command of Allied Forces Central Europe (AFCENT). Four and a third divisions are in Germany, plus two brigades in the US, plus two new brigades planned. By committing these five divisions, the United States is able to rely on an army in the Central Region totaling more than twenty-five divisions, eighty percent of which is contributed by Northern European members. Similarly, the Germans benefit from the same twenty-five-division army by contributing twelve divisions, the British four, the Belgians two, the Canadians a brigade, and so on.

To speak only of national self-interest, however, is misleading. The most important bond holding NATO together is political—the belief of the overwhelming majority of us that representative government is best. We prefer to live in open societies in which we are free to criticize, oppose, and peaceably advocate change in government, rather than in a closed society of the right or left.

True Cost of the Alliance to the US

I am in no position to make a judgment as to the “true” cost of the Alliance to the US. Different experts use different criteria, and their estimates range from a few billion dollars to more than \$20 billion. It is as difficult to estimate as the cost to the US if there were no NATO.

With the exception of nuclear weapons, the European members make the major contribution in every major category of defense, *e.g.*, ninety percent of the ground forces, eighty percent of the naval units, seventy-five percent of the tactical air force, and seventy-five percent of the budget for NATO’s infrastructure. The US, with forty percent of the people and more than half the gross annual product, has a bargain. All these forces, while they defend Europe, also defend North America, just as United States strategic forces defending North America also defend Europe. We are all getting far more than any of us individually can pay for in total defense.

The United States is defended by a million European soldiers—two million if you count reserves—thousands of European aircraft, and hundreds of European ships and submarines.

One might well ask: “What is the true cost to Europe of its defense of the United States?”

The answer is the same for everybody in the Alliance. We all pay about one-twentieth of our national wealth for a common defense, and what we get in return is our freedom. The US, with global defense commitments, pays about one-fifteenth.

Relative Burden-Sharing Among NATO Members

Three years ago, one of the most serious problems for the US was the flow of cash from America to Europe, caused largely by the presence in Europe of 300,000 US servicemen.

The European members of NATO have made a special effort to bring the US cash position in balance by assuming certain troop support costs, and developing equipment purchase agreements to: (a) reduce the amount of money spent in Europe by the US; and (b) increase the amount spent in the US by Europe. Last fall, US Deputy Secretary of State Robert Ingersoll announced that the goal had been achieved. NATO is no longer a drain on the US in that way; the cash flow is in balance.

The burden-sharing required to solve America’s cash-flow problems was relatively simple compared with other burden-sharing problems developing around the Atlantic community. It is difficult to see how we can ever fully achieve the political unity imperative to a healthy Alliance so long as there is such a marked difference in the living standards of many of our peoples. Within NATO are countries in which the average annual income ranges from \$500 to \$6,000. Such discrepancies do not promote uniform support for Alliance activities. Perhaps the Alliance would be a great deal stronger if the “have” nations in the Atlantic community were to get together to develop a new “Marshall Plan” in the spirit of the old American tradition of barn raising, to help our less-fortunate allies become more equal. That would be a burden worth sharing.

Need for Forward Basing in a Period of Détente

Détente merely means a relaxing of international tension. It does not, by definition, mean that fundamental problems have been solved—only that the atmosphere has improved for problem solving.

I see no change in the relationship of the Pact and NATO that yet justifies any significant change in our military planning. Perhaps our MBFR negotiations will ultimately produce such a change, but they haven’t as yet.

Forward basing in general greatly reduces the temptation of the other side to believe that a quick, profitable advance might be made at low risk, followed by talks, before military action can become too serious. It is especially impor-

tant that United States forces be forward-based because this removes any doubts held by the other side, or the Allies, about the nature of the US commitment. If US forces were in rear areas, a serious question would develop about US national intentions in the event of hostilities. Such questions may give birth to temptations that could lead to military adventurism by the Soviet Union.

Supporting Members' Policies Outside the NATO Area

The Atlantic Alliance exists to defend the territory of its member countries against external attack with regard to events occurring outside the NATO area. It is obvious that a multinational Alliance of democratic countries, enjoying press freedom and harboring a variety of volatile public opinions, will be fertile in differing views and even, at some levels, conflicting interests. But superior to such factors is the overriding conviction of members that the achievement of common aims demands close consultation, mutual trust, and cooperation on all issues relating to their common interests as members of the Alliance, bearing in mind that these interests can also be influenced by events in any part of the world.

Assessment of Continuing Value to NATO of Greece, Turkey, Italy, and Portugal

Each of these countries plays an important and special role in NATO. Greece and Turkey together have given us the capability of controlling entry to the Mediterranean and securing NATO's right flank. Geographically, Italy dom-

inates the central Mediterranean, as well as the sub-Alpine lowlands. Portugal, among other things, has an important Atlantic coastline and has valuable bases in the Azores.

These are strategic advantages of importance to the defense of the West as a whole and therefore also vital for the defense of these countries themselves which, like all NATO countries with the doubtful exception of the United States, are unable to defend themselves effectively on their own. So the question should really be turned around: "What is the value of NATO to them?" I believe that NATO has enormous value to each of them, and I trust them, in their own national self-interest, to concern themselves fully with their roles in NATO, once the current uneasy situations are resolved.

NATO Limitations in Dealing with Intra-Alliance Disputes

Much depends on how we define "dealing." Obviously, in a situation like the Cyprus crisis, NATO has no authority over the parties. However, it is a great mistake to assume impotence in the absence of authority. As I pointed out above, NATO offers intra-Alliance adversaries a council chamber where diplomats can meet and discuss in the presence of mutual friends those problems that cannot be discussed bilaterally by their governments. This actually occurred during the Cyprus dispute, and a great deal was worked out in these quiet conversations. Despite the intense heat of the situation, both Greece and Turkey maintained their NATO contact in Brussels to good effect. ■

NEVER THE TWAIN . . .

Recently, another Japanese soldier came out of the Philippine jungle. It reminded me of a meeting back when I was flying C-123s in Vietnam.

It was one of those sparkle-clear mornings in Vietnam's highlands. We'd flown into Ban Me Thuot East to pick up some MAAG types. As usual, only Vietnamese met our C-123; there was little VC pressure in late 1963, so we often waited for our passengers. Still, it was a chance to take in some local color.

While browsing around the air terminal, I spotted—and was spotted by—a wrinkled old-timer selling crossbows. He rushed over, beaming and chattering away in what sounded like Japanese, albeit halting and sprinkled with Vietnamese. Mustering my best (and only) third-generation Japanese, I excused myself: *Nihon-go wakarimasen* ("I don't speak Japanese").

His whole body sagged, as if I'd announced the end of the world. As much to salve his disappointment as anything, I indicated that I'd like to buy one of his bird bows. We went through the motions of haggling, even though it was obvious his heart wasn't in it.

A little later, the girl tending the information counter explained that my bow seller was a Japanese soldier left behind from World War II. He'd been integrated into the community, but always looked forward to the day he'd be able to talk with another Japanese.

When we took off an hour later, a small rain shower was moving in from the west. The air had become damp and heavy, just like my spirits.

—Contributed by Maj. John F. Takeuchi, USAF

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

AS OUR plane droned toward Tokyo, I tried to sleep, but my mind kept racing over the events of the past thirty-six hours—first our flight from Tokyo to Manila, then the meeting with Gen. Douglas MacArthur's staff to discuss the surrender of our country, and finally the tiring hours that followed as I meticulously translated into Japanese the documents that would finalize surrender arrangements.

"I shuffled my foot in the darkness of the cabin to confirm that my briefcase with the documents was still safely beside me."

The experience of assisting with surrender and occupation arrangements left an indelible mark in the mind of Harumi Takeuchi, one of the sixteen Japanese officers sent to Manila by the Emperor in August 1945. Negotiations had gone smoothly, but an event was about to take place that could result in grave mistrust on both sides.

The former Imperial Japanese Army lieutenant continued:

"I must have dozed, for I was startled when I felt a hand firmly shaking my shoulder. In the dim glow, I recognized one of the pilots, who announced, 'We're going to ditch! Life jackets on!'"

"The engines sounded as though

they were running smoothly, but I donned the life preserver and covered my head with my hands as directed.

"I pressed the leather briefcase between my chest and lap. My mind was filled not only with thoughts of my own danger, but also with the consequences of losing those surrender documents. Would the tedious hours of conferences in Manila—the product of which I was clutching—disappear with me into the inky water below? But incomparably more important, what would be the reactions from both opposing forces when it became known that the Japanese delegation and the surrender arrangement plans had not reached Tokyo? Would either side—or both—believe that the other had perpetrated an act of deception, and so continue the fighting with the loss of many more lives?"

The roar of the engines diminished, followed by a terrifying shudder and a scraping sound as the plane hit the first wave. Then, after what seemed like an eternity of silence and suspension in space, came the agonizing impact as the plane bellied into the black water.

"Send Emissaries to Manila"

Lights burned all that night in

the quarters of the newly appointed Prime Minister, Prince Naruhiko Higashi-Kuni, uncle-in-law of the Emperor. Troubling thoughts filled his mind; it was well past the time of the delegation's expected return. Had Japan's *Tokko Tai* (air attack units) made good their threat to shoot down the surrender delegation, thus refusing to allow their country to surrender? Or could this be an American trick? Had they made prisoners of the envoys for some unknown reason?

The Emperor was also vitally concerned. Although three to four million Japanese soldiers were still poised against an invasion, the Emperor had responded in good faith to the demands of the Supreme Commander of the Allied Powers once the surrender decision had been reached.

Chaos and confusion had reigned throughout Japan following the Emperor's announcement of surrender—the first such announcement in the nation's history. Three hours after the surrender, the cabinet, led by Prime Minister Suzuki, had offered to resign, but the Emperor had ordered them to function until a new cabinet could be formed by Suzuki's successor as Prime Minister, Higashi-Kuni.

Thirty years have passed since Japan sent a delegation to MacArthur's headquarters in Manila to make surrender arrangements that would end World War II. Two of the Japanese representatives, in interviews with the author, relate for the first time their experiences as . . .

THE EMPEROR'S ENVOYS

BY ROBERT C. MIKESH

Japan's situation was entirely different from that of Germany in her defeat. The government was intact, and the military services were still organized. Imperial General Headquarters, within the limits of its communications, still exercised control over the armed forces. It was through the military that initial surrender and occupation arrangements with the Allied Forces would be made. General MacArthur, the Supreme Commander of the Allied Forces, conducted most of his communications through the Imperial General Headquarters.

The language barrier was formidable. Lieutenant Takeuchi and his colleague, Lt. Sadao Otake, were made responsible for translations. Otake, who was assigned to the Intelligence Branch of Imperial General Headquarters, recalled that "after the Emperor's surrender announcement at noon on August 15, the directives from General MacArthur's headquarters mounted and had to be handled most delicately."

One of those messages read, in part:

Send emissaries [to Manila] at once to the Supreme Commander for the Allied Powers with information of the disposi-

tion of the Japanese forces and commanders, and fully empowered to make any arrangements directed by the Supreme Commander for the Allied Powers to enable him to receive the formal surrender.

Some ranking officers in the Japanese headquarters felt the delegation would be responsible for signing the surrender agreements; others believed differently.

Otake suggested, "Let's ask!" Educated in the United States, he had learned the direct approach, the opposite of typical Japanese methods. Thus, on August 16, a message was sent asking for clarification of a phrase, "certain requirements for carrying into effect the terms of surrender."

General MacArthur understood the question in the minds of the Japanese. He replied that signing the surrender terms would not be among the tasks of the Japanese representatives in Manila.

The day before the envoys' departure, Otake and Takeuchi were told they would be interpreters for the delegation headed by Lt. Gen. Torashiro Kawabe, Deputy Chief of the Army General Staff. "The thought of being confronted by the Americans under these circum-

stances did not bother me," Otake recounts, "but this was not so with others in our group. Though it was a distasteful task, it was the Emperor's wish, and all of us prepared for our respective areas of responsibility."

White Bettys, Green Crosses

At daybreak on August 19, members of the delegation met at Haneda Airport, now Tokyo International Airport. The plane was a Japanese version of the Douglas C-47 (DC-3), painted white and marked with green crosses as MacArthur had directed. It took off from Haneda at 0611 hours, and, fourteen minutes later, landed at Kisarazu Airfield, on the east side of Tokyo Bay. There, the delegates were divided into two groups of eight each and hustled aboard two twin-engine bombers, painted and marked the same as the transport. By 0707, both bombers were airborne, heading for Allied territory.

Otake continued, "I had heard of the many threats by resistance groups to prevent our departure for these surrender negotiations. However, there had been no signs of resistance along the road or even from onlookers at the airfields. The original instruction received from the

Lt. Gen. Torashiro Kawabe, Deputy Chief of the Army General Staff (second from left), led the delegation to MacArthur's headquarters. Interpreter Otake is at right rear, wearing sunglasses.



B-25s of the 345th Bomb Group escorted the two Bettys to Ie Shima, while P-38s flew top cover. An SD-1711 with lifeboat (below B-25) provided the Japanese envoys all possible protection.



Americans was to depart on the 17th. We found it impossible to make all the necessary arrangements for the flight by this time, mainly due to the reorganization of our government, and asked for various changes. We were advised that the intended measures were satisfactory and were promised every precaution to ensure the safety of the Emperor's representatives.

"It was learned that Capt. Yasuna Ozono, the commander of the 302d Naval Air Corps at Atsugi Airfield near Tokyo, had pledged his forces to intercept and destroy the transport planes before they could reach American-controlled soil. I did not hear until later that he had committed *hara-kiri* the night before our departure when he learned that he was not fully supported by his officers.

"Our aircraft was an early version of the Mitsubishi G4M1 land-attack bomber, known to the Allies as 'Betty.' There were bucket seats along each side that proved most uncomfortable through the many hours of sitting. For no apparent reason, I remember most vividly an empty gasoline can that rolled on the floor as our cigar-shaped bomber wallowed through the air. As none of us were 'men of the air,' we were

somewhat reluctant to assert ourselves about anything to do with the craft. But, after several hours of the can's annoying rolling, we finally took it upon ourselves to secure it to the floor.

"We approached the southern tip of Kyushu at 1115, and, soon afterward, I could see that we were being escorted by twelve American P-38s. Soon we were joined by two North American B-25s, and I was summoned into the cockpit as our pilots were unable to converse on the radio with the Americans. The B-25s merely wanted to confirm our identity and find out who was on board. They advised us to follow their escort to the prearranged landing field on Ie Shima island."

At 1240, the first of the two planes landed on Ie Shima just off Okinawa. There, four months earlier, Ernie Pyle, the Pulitzer Prize-winning war correspondent, had been killed during the invasion of the island. To onlooking American GIs, the landing aircraft meant the realization of what they had been fighting for from one island to another. The Japanese inside the aircraft were well aware of these feelings. Lieutenant Takeuchi recalled: "As our plane approached the runway, we saw what seemed

to be thousands of American soldiers forming a solid ring around the field. It was obvious that this was not security, but merely curiosity. But so many!

"A sudden jolt; our plane contacted the runway firmly, only to become airborne again for a few moments. I learned later that our pilot was also so impressed by the crowds of Americans that he neglected to lower the landing flaps, causing a higher sink rate than was desired.

"The moment of being confronted by the Americans had arrived. After a pause, General Kawabe rose firmly to his feet and strode to the door. My own fears and uneasiness were put aside with the thought of the heavy burden placed upon him and the personal anxiety he must be undergoing."

Heat from the sun-baked coral surged into the aircraft as the door was opened. General Kawabe stepped out, with hundreds of eyes upon him. His officers followed by rank. The second aircraft was parked immediately behind the first and its passengers deplaned. News photographers were everywhere.

The Japanese moved to the small delegation of waiting Americans. No salutes or any form of greeting were exchanged. General Kawabe stepped

The runway at Ie Shima was ringed by thousands of American troops as the envoys' aircraft landed. For the GIs, it meant the realization of what they had been fighting for.



The haste in which the Bettys were painted white is evident. Japanese airmen, standing under the wing, ignored the crowd of Americans that surrounded the Japanese planes at Ie Shima.



forward to the senior American officer and handed him his credentials. Then the group was motioned into the shade of an American C-54 transport, which would take them the rest of the way.

Lieutenant Otake continued: "Standing beside the senior American officer was a darker-skinned American acting as interpreter. Very formally, instructions were passed to him with the intention of their being relayed to us in Japanese. It was here that I would have broken out in uncontrolled laughter, had the tenseness of the situation not prevented it. I could not hear the words in English, but only a few words the 'interpreter' relayed to us sounded anything at all like Japanese. When this gibberish ended, we were motioned to board the American craft that was to take us to Manila. We left with the feeling that the Americans were fully satisfied they had flawlessly conveyed their message to us, yet I had no idea of one word that was said."

After the C-54 took off, it was kept beneath the scattered clouds as it passed over nearby Okinawa so that the Japanese could see the military might being amassed below for Operation Olympic, the planned invasion of Japan. En route to Manila,

the Japanese were served American box lunches and coffee with plenty of sugar, a commodity that had been scarce in Japan for many years.

Meeting at Manila

The C-54 landed at Manila's Nichols Field at 1800. The Japanese envoys were received correctly but coolly. Meeting the Japanese, who are small in stature by nature, was one of MacArthur's tallest officers, Maj. Gen. Charles A. Willoughby, his Chief of Intelligence.

Lieutenant Otake recalled: "We left Nichols Field in a parade of staff cars. As we drove down Dewey Boulevard [now Roxas Boulevard], Filipinos along the way paused to stare. Seeing Japanese inside the cars, many onlookers sneeringly shouted the Japanese words, 'Baka Yaro,' at us [English equivalent: SOB]. I could not help but remark, 'Is that all we were able to teach these people while we occupied the Philippines?'"

The motorcade proceeded to the Rosario Manor, where the delegation was to be billeted. Few other buildings remained standing in the area. To the delight of the Japanese envoys, a complete turkey dinner was waiting for them. Because of the acute food shortage in Japan, many

of them had not tasted meat for years. "I felt I was partaking once again of an American Thanksgiving dinner," Otake remarked.

"We had no sooner finished dinner," he continued, "than an American colonel stood before us. It was time for the conference to begin. The colonel requested that the Japanese officers leave their swords behind. I sensed a tenseness throughout our delegation, and our eyes all turned toward our general, wondering what his reply would be.

"With little hesitation, Kawabe's words to be passed on to the colonel were, 'Sir, our swords are part of our uniform. We would like to be permitted to wear them, but we will leave them outside the conference room with our hats, if you desire.' The colonel nodded, and this procedure was followed."

It was almost 2100 when the Japanese arrived at City Hall. In the conference room, the Japanese and American officials sat on opposite sides of the table, with counterparts facing each other. Each side was represented by specialists in such areas as supply, engineering, and power facilities. Of special interest to the Americans were the harbor facilities at Yokohama and the landing field at Atsugi, which were to be the first

The envoys, boarding a C-54 for the flight from Ie Shima to the Philippines, were impressed by the enormity of the aircraft—the largest any of them had seen close at hand.

The envoys deplaned at Nichols Field, Manila, their briefcases bulging with secret documents, as they prepared to meet the delegation from General MacArthur's staff.



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staging bases for the occupation, then set to begin on August 25.

"Later, after some of us returned to Rosario Manor," Otake said, "there was much discussion over this early occupation date. Because of the unpredictable reactions of both the Japanese civilian and military elements, an attempted occupation at this early date might have its misfortunes.

"I brought this point up with an American lieutenant colonel who was assisting in translations. The question was whether or not we should attempt to have the date postponed. He said there was no harm in trying, which to me was a typical American attitude I admired. Consequently, at the second conference, General Kawabe again explained the problem.

"With little hesitation, Lt. Gen. Richard Sutherland, MacArthur's Chief of Staff, granted a three-day extension. This to us was but one example of the fairness with which the Americans handled many problems that arose. It was far different

from the treatment we had expected, but this approach probably prevented consequences that the Japanese might not have been able to control."

The meetings continued through the night of August 19 and into the next day. As General Sutherland led the discussions, linguists translated and photostated the various reports, maps, and charts the Japanese had brought with them. Translators worked through the night to put General MacArthur's requirements into accurate Japanese. It was vitally important that all documents be correctly translated so that surrender arrangements could be completed with minimum misunderstanding and maximum speed.

General Kawabe was handed the "Requirements of the Supreme Commander of the Allied Powers." These directives set down demands concerning the arrival of the first Allied forces in Japan, the formal surrender ceremony aboard the battleship *Missouri*, and the subsequent reception of the occupation forces.

The Manila conference was over. The Japanese had not once seen General MacArthur. His absence added great impact to his new position as Japan's military governor.

By early morning, the Japanese prepared to leave their billets. Hard candies, packed in tins, had been at

their disposal. It had been so long since the men had had any sweets that several asked if they might take some to Japan. All received fresh cans of candy for the journey home.

Hospitality at the manor had been most gracious. Lieutenant Takeuchi was the keeper of the money purse for the group, but there had been no expenses. To express his group's appreciation, Takeuchi left a tip for the manor's employees. (The building had served as the Japanese Embassy during the occupation, and as the American Embassy after the American liberation. It is known today as the Rosario Apartments, and few are aware of its wartime history.)

At Nichols Field, the Japanese again boarded the C-54 and were on their way to Ie Shima by 1300. Otake and Takeuchi were kept busy with further clarifications and translations of the vital documents, and dividing them between their two briefcases.

At Ie Shima, the group was informed that one of their aircraft had mechanical problems and could not be repaired until the following morning. Not all the Japanese could be transported in one aircraft. The group and the documents were purposely divided so that if one plane should have trouble, all would not be lost.

General Kawabe asked for volun-

Maj. Gen. Charles A. Willoughby, MacArthur's intelligence chief and head of the American reception party, received the sixteen members of the Japanese delegation.

Staff cars carried the envoys from Nichols Field to their billets, where they dined on turkey before proceeding to City Hall to begin the surrender negotiations.



teers to remain behind until the airplane was fixed. Since living among Americans was not foreign to Lieutenant Otake, he volunteered, along with four others. They were assigned billets with American officers of equivalent rank.

Otake moved in with a Nisei lieutenant, and they got along famously. Bottles of sake were opened and they stayed up most of the night discussing things they had in common—mostly the war.

The Flight That Almost Failed

The first bomber left Ie Shima at 1840. With the group aboard this "Betty" was Lieutenant Takeuchi, in whose care were placed the conference documents. The aircraft had no inside lighting, and about an hour of daylight remained in which to continue putting the documents in workable order for immediate use upon arriving in Japan.

"I did the best I could with the remaining daylight and then packed the papers carefully into my briefcase," Takeuchi recalled. "Now that it was dark, the P-38s discontinued their escort and the tensions that we had felt for so many hours began to ease. A bottle of whiskey was passed around, and I began to relax."

The bomber droned toward Tokyo. It was almost midnight when the command was given to prepare

for a crash landing. Soon came the sickening sound of impact with the water. Then:

"As I became aware of the lapping sound of the water around me," Takeuchi said, "I had the surprising awareness that I was still alive. The pilots stumbled from their compartment, one stopping to check on his passengers, the other moving directly to the rear door. As he opened it, water gushed in at a very great rate. I started moving toward the door prepared to swim, briefcase and all. I saw the pilot step out and expected to see him disappear beneath the inky water. To my surprise, the water came only to his knees, and the two pilots began carrying us on their shoulders to the beach. Miraculously, no one was seriously injured.

"The pilots had landed in the surf along a wide beach near Hamamatsu, about 130 miles short of Tokyo. I never did probe completely into the reason for the forced landing, but some thought that because of the language barrier a few of the fuel tanks were not serviced at Ie Shima, and enough fuel was not on board to reach Tokyo.

"Our plane had come down at 2345, and there was not a light to be seen. Shortly, a figure cautiously came from the shadows. After his request to identify ourselves, we found that he was a fisherman.

"He led us some distance to a phone, and we called the nearby Hamamatsu Air Base to explain our predicament. They sent transportation for us, and we arrived at the base at 0330 that morning."

At 0700, General Kawabe, Takeuchi, and the other envoys left Hamamatsu with the surrender documents in an Army heavy bomber, and arrived an hour later at Chofu Airfield on the west side of Tokyo. That same morning, Lieutenant Otake and his four associates left Ie Shima for an uneventful flight to Kisarazu.

Prime Minister Higashi-Kuni promptly took General Kawabe to the palace for a detailed report. He was glad to hear that both groups of the party were safe, but was far happier to learn that General MacArthur's terms for his nation were not as severe as he had feared.

According to Higashi-Kuni, "The Emperor was quite relieved. He was thankful not only for the safe return of all his envoys, but that these dark days had now been ended." ■

(AUTHOR'S NOTE: Mr. Sadao "Roy" Otake, a former editor of the *Japan Reader's Digest*, is now an adviser to the Foreign Ministry in Tokyo. Mr. Harumi Takeuchi has served as Japan's Ambassador to the Philippines, and is now Ambassador to Italy.)

The chiefs of the two delegations, Lt. Gen. Torashiro Kawabe and Lt. Gen. Richard K. Sutherland (both fourth from left), faced each other across the table as negotiations began.



Outside the conference room, ornate Samurai swords of the Emperor's military envoys lay on a battered desk, signifying the end of a war—and the end of an era.



A Department of Commerce Soviet expert shows how the USSR has raised productivity in defense-related areas to nearly double the national average.



Russia's Drive for Technical Productivity

BY EDGAR ULSAMER, SENIOR EDITOR, AIR FORCE MAGAZINE

WITH about half the gross national product of the United States, the USSR's procurement of military and space hardware and associated research and development is twice that of the United States. Total Soviet expenditures for space and defense, including operations and maintenance, are between twenty-five and fifty percent greater than this nation's. The USSR's output of "engineering" products, such as machinery, is about twenty-two percent higher than this country's.

These are among the findings of a continuing study by the US Department of Commerce Soviet technology expert, Senior Analyst Dr. Michael Boretsky. In a report to the American Institute of Aeronautics and Astronautics, Dr. Boretsky tells how the Soviet Union uses economic camouflage in the form of widely divergent purchasing power of the ruble to hide its huge investment in defense. This divergence, he finds, is scaled to the relative importance of a given sector of the economy to defense. "The more essential a sector of the economy is to defense, the higher is its relative level of technological development and the lower is its relative cost of production and, hence, the relative cost of defense."

For example, in the Soviet domestic economy, the purchasing power of the ruble, expressed in 1973 dollars, ranges from about \$3.75 for defense and space-related

engineering products and manpower, to as low as ninety cents for coal production, Dr. Boretsky calculates.

The effect of these disparities "is that when we calculate Soviet defense expenditures as a percent of their gross national product or national income, both valued in rubles, the apparent burden looks smaller than ours, but if we systematically convert all these [gradations in purchasing power] into US dollars, the Soviet defense burden becomes more than two and one-half times as great as that of the United States."

Dr. Boretsky's study uses statistical devices to establish approximate values for the US and Soviet output per man-year, which in turn serve as the basis for calculating the relative levels of technological development in the two countries. The conclusions, which the study warns are not exact, are that Soviet output per employee is significantly lower than that of the US and varies greatly in major sectors of the Soviet economy. While productivity in agriculture is only ten percent of the US level, according to Dr. Boretsky, it reaches sixty-seven percent in the engineering products industries. Overall, Soviet manpower productivity is said to be about thirty-six percent of the US level, which the study equates with the USSR's general state of technological development relative to that of the US. The Soviet technology level is "some twenty to twenty-five percent lower than

Japan's average, and some forty percent lower than the average of the major West European countries."

The study cites two measures of merit applicable to growth trends that benefit the Soviet "military-industrial complex"—expenditures on R&D as a percentage of GNP, and employment of scientists and engineers in R&D. In the military sector, Dr. Boretsky finds, the USSR increased the R&D percentage of GNP from 2.5 in 1965 to 3.8 in 1973, while the US dropped from 3.0 to 2.4. The number of Soviet scientists and engineers assigned to R&D programs increased from 594,000 to 1,069,000 over the same period, compared to an increase from 454,000 to 531,000 for the United States.

Other signs of Soviet technological progress include increased capital investment for modernizing existing research and development laboratories, and for constructing and equipping new ones. There is evidence that, in 1973 purchasing power, Soviet expenditures for R&D labs grew from about \$2.7 billion in 1965 to almost \$5 billion in 1973. The US had no significant growth in investments of this nature during that period.

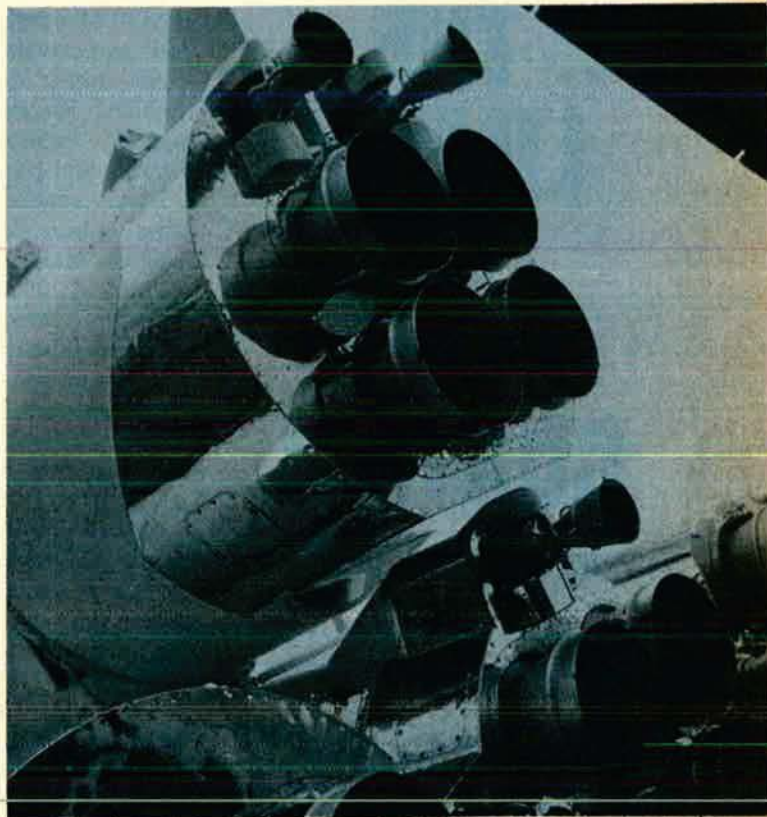
The study found a seeming deterioration in the educational background of Soviet R&D manpower, between 1960 and 1965, with the percentage of doctors of science among scientific workers dropping from 3.1 percent in 1960 to 2.2 percent in 1965. This trend has been reversed, and had risen to 2.7 percent by 1973, according to Dr. Boretsky. Concurrent with renewed emphasis on highly trained manpower, the study found, "there is an increasing effort by the institutions of higher learning to produce scientists and engineers of 'broad profile,' able to pursue multifaceted R&D endeavors, rather than narrowly specialized graduates, as was the case in the past."

Complementing Soviet policies of increasing technological productivity is a program to cull dead wood from the technological sector by "regularly reassessing the R&D personnel for the effectiveness of its work and to transfer or dismiss those performing unsatisfactorily." This program is linked to pay incentives that break with the traditional Soviet policy of remuneration according to academic qualifications and age, and which relate an individual's earnings to his work contribution. Closer coupling of the research and development apparatus with production organizations through so-called "scientific and production associations," plus more liberal access to something akin to venture capital are other recent measures to increase the USSR's technological and industrial productivity.

Finally, the study shows, "there is the large-scale effort to import advanced technology from abroad, especially from the United States. The program got under way in 1968; by now it is part of the overall five-year plan."

The Soviet objective here is to obtain both patent rights and licenses as well as fully operational "turn-key" plants that permit full and risk-free exploitation of technology. Areas the Soviets appear most eager to duplicate from US models include "computers, integrated circuits, numerically controlled machine tools, manufacturing of wide-bodied civilian aircraft, automatic control technology including avionics, and a score of chemical technologies."

In tandem with the quest for Western know-how, the study finds, is a systematic campaign to make Soviet products, based on acquired technologies, acceptable in world markets. To achieve these twin objectives, "they have organized an extremely elaborate and well coordinated mechanism and designed a virtual textbook strategy and techniques for obtaining the technology at bargain prices, including the minimum outlay of hard



This Soyuz booster is indicative of the USSR's concentration of resources on space and defense.

currency. The techniques in question include such things as sending thousands of specialist delegations abroad to see personally how good [foreign] technology is and how it can be obtained."

It is estimated that 200 Soviet delegations visit the United States for this purpose every month, negotiating with practically all US companies that possess the technology they seek, and bargaining by setting one company's offer against others, "pressing for long-term remuneration 'in kind,' . . . liberal use of noncommittal promises for long-term cooperation and large 'deals' in the future," according to the Commerce Department's Soviet expert. Acquiring market-tested technology, the assessment suggests, cuts the lead time of new technologies in half and is considerably cheaper.

Dr. Boretsky's study concludes that since our investment in technology "is clearly on the way down and the Soviet effort is on the way up, and this on at least nine fronts, some of which are very fundamental, the Soviet effort must be rated as infinitely larger" than that of the US.

"This obviously has rather pressing policy implications for the US." ■

In the author's judgment, the conflicts of interest that prompt military preparedness also preclude effective arms control agreements.

THE LIMITS OF ARMS CONTROL

BY COLIN S. GRAY

WHATEVER may be the specific policy issues that divide us, everybody favors arms control: It meets with no generic criticism. However, the history of arms control endeavor—from earliest times to SALT II—suggests that arms control agreements and discussion express, rather than help restructure, political relationships. In short, no agreed technological peace can preface and promote political peace.

Arms control agreements, to endure, must reflect tolerably the political interests of the parties thus controlled. This commonplace observation has implications so obvious and potentially disturbing that frequently its sense is ignored. States in competition will moderate their armed rivalry by agreement only when mutual disadvantage is perceived in not so doing.

What is surprising is that so many professing arms controllers seem to be more interested in attesting to their own virtue than they are in being effective with respect to public policy. The arms control community usefully raises policy-relevant questions and is invaluable in its dissemination of information, but—to the extent to which it clings to its distinctive credo—it tends to irrelevance in the debating of policy alternatives.

Arms control, like strategy or defense policy, is a political subject. States do not seek the best *arms control* solutions to problems of SAL or of MBFR (Mutual Balanced Force Reductions)—rather they seek agreements that promise the maximum political return at the lowest negotiable political cost. It follows that much of the criticism of official efforts pertaining to SALT and MBFR is misplaced: Neither of these forums is really about arms control, popular identification notwithstanding. In arms control perspective, the Vladivostok Accords of November 24, 1974, are indefensible. The Accords seem certain to promote both arms race and crisis instability. The costs of military preparation will rise, the danger of war could easily increase (as the missile silos of both Super Powers become vulnerable), and the damage likely

to ensue from war could well prove to be little short of total.

Vladivostok Accords responsive to arms control criteria would have set a very low common ceiling on missile throw weight (to restrict the number of MIRVs deployable), constrained missile flight-testing very severely (so that, for example, the United States could not test the instrumentation package of AIRS—the Advanced Inertial Reference Sphere—in 1976, and the Soviet Union could not gain confidence in her MIRVing option for the SS-18 and in the MIRV-only SS-19), and made the “threshold” underground test ban effective as of, say, January 1, 1975 (thereby precluding perfection of the Mk 12A warhead for Minuteman III, and halting design work on more powerful warheads). Members of the arms control community should ask themselves why it was that the above-mentioned constraints were not embodied in the Vladivostok Accords.

Folly and wickedness serve to explain a great deal of human activity, but they are not appropriate for an understanding of Vladivostok. However imprecisely, each Super Power sees its strategic forces as political instruments, “peacefully” prosecuting a conflict without violence. So long as political rivalry continues between Moscow and Washington, no SALT agreement can be more than cosmetic—in arms control terms, at least. Strategic forces are perceived as being too central to the security—if not the identity, self-esteem, and very existence—of the Super Powers, for either to be willing to pretend that its political interests can be parked in a holding pattern, while arms control technicians solve the problems of strategic balance and imbalance.

Just as an arms control SALT agreement is impossible, so an arms control MBFR agreement is beyond reach. By definition, an era of détente presupposes the existence of some political interests in conflict. In such an era, the most that an arms control agreement can accomplish is the registration of facts. It cannot restructure military balances in aid of improved political relations. The

year 1974 saw fruitless attempts at such restructuring in the contexts of both SALT and of MBFR.

Unless one favors arms control agreements for their own sake, this is not to criticize Western (or Eastern) governments. As the Soviet Union declined to forego her missile throw-weight advantage in the interest of a sound arms control SALT II accord, so she also refused to negotiate disadvantageously asymmetrical ground-force cuts in Central Europe.

For excellent reasons, NATO has sought in vain to persuade the Warsaw Pact to reduce unequally so that a common ceiling of 700,000 men would be attained (entailing cuts of 77,000 men by NATO, and 225,000 by the Warsaw Pact, on the basis of NATO calculations; there are no Warsaw Pact figures). The counter-offer by the Warsaw Pact would require total cuts of 130,000 men by NATO, and 158,000 men by themselves (leaving a balance of 640,000 to 767,000—again, on the basis of NATO calculations). In short, as an arms control exercise, MBFR is a total nonstarter. As with SALT, the only agreement likely to prove negotiable in MBFR will be of a token character, symbolizing the mutual commitment to détente.

The side that enjoys the more favorable weighing in the balance under discussion—which is the Warsaw Pact with respect to ground forces in Europe—will not forego the benefits, real and possibly illusory, of that imbalance in the interest of making an agreement that is easily defensible in terms of Western arms control theory. Since the Soviet Union is presumably reasonably confident that NATO will eventually accept a largely symbolic MBFR agreement, the incentive to abjure the political gains of an imbalance of conventional forces must be assumed to be minimal.

In and of themselves, arms control arguments carry very little weight with most politicians. Their world is political, not military-technical. The multidimensional burden of armaments is such that political benefit is expected of them. Arms control agreements that *effectively* would depoliticize armed forces, bal-

ancing one side off against another with near mathematical precision, are as difficult to design as they would be unattractive in the political world.

The depressing truth is that technical arms control has no future in the state system as we know it, just as it has no past of note. Technical arms control refers to agreements that impose constraints that affect the military environment in non-marginal ways. In MBFR, for example, NATO's proposal for a common ceiling of 700,000 men constitutes technical arms control: Mutual reductions of 20,000 men would be political, *pro forma*, or symbolic arms control.

It is not to be denied that purely political arms control can be of value to international security. Even symbolic force cuts, or, say, token inspection of suspicious seismic events, may promote the political confidence that is fundamental to feelings of security. However, tokens and symbols are not the stuff of which much Western arms control theory is made.

The plausibility or otherwise of the view expressed above must depend upon the meaning attached to the term *arms control*. While admitting that arms control may pertain to command control and communication arrangements, or to changes in targeting doctrine, most arms controllers seem still to adhere to the notion that arms control is really about the shackling of military potential as a track leading to political relations less fraught with tension. If this is true, the contemporary arms control community must be judged to be an irrelevance.

Arms control agreements are endorsed because they reflect political interests, not because they are predicted to improve political relations. Whatever their political value may be, every so-called arms control agreement signed over the past sixteen years has been of a fact-registering, symbolic character, contributing little if anything to the stability of the military dimension of international security. Indeed, on the contrary, a powerful case can be argued that protracted arms control negotia-

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tions tend to have a net negative effect upon international security. In a period of improving political relations—a precondition for arms control negotiations—the serious consideration of arms control proposals is likely to catalyze both warranted and unwarranted military anxieties and to yield sensible “negotiation from strength” arguments to the proponents of new military technologies.

Although the principal thrust of this article is to the effect that laudable arms control intentions must be thwarted by the very character of intentional politics, it may be argued—no less seriously—that the pace of technological change renders many possible arms control agreements of very dubious benefit.

SALT I is undermined in its value by the Soviet MIRV program (rendering the numerical ceilings almost irrelevant), and by ICBM cold-launch techniques (rendering missile throw weight beyond meaningful control), while SALT II promises to be an arms control irrelevance because of the cruise missile issue (which is incapable of being accommodated within a strategic arms control regime) and because of the qualitative free rein accorded each party. Indeed, within ten years we could well come to regret the terms of the ABM Treaty that preclude any endeavor to construct a substantial, dedicated, hard-site defense.

The political considerations that prompt military preparedness are the very arguments which preclude meaningful arms control agreements. As a near-permanent feature of Super Power relations, arms control may easily be defended: Every sustained forum for contact should have some

value in diminishing ignorance and prejudice. However, the cause of arms control as an activity intended partially to restructure interstate military relations to the mutual ad-

vantage seems quite divorced from and certain to be thwarted by the reality of political competition.

The arms control community should be seen as a latter-day, col-

lective Don Quixote, tilting honorably yet necessarily ineffectively, at the windmills of state interest: *C'est magnifique, mais ce n'est pas la politique.* ■

MAJOR ISSUES OF SALT II

Arms control negotiations have two agendas, explicit and implicit. SALT seems to be about strategic force levels and the permissible mix of those forces, but also it is about the relative political standing of the Super Powers and about the kind and degree of political confidence (in the dominant American view, at least) that each may feel concerning the future behavior of the other.

There is a further distinction to be drawn: between the military detail of arms control bargaining (the explicit agenda) and the strategic meaning of different negotiating outcomes. The explicit currency of SALT II may be SS-18s and SS-19s, but the implicit agenda contains a concern to appraise the future hard-target counterforce potential of the various numerical combinations that may be negotiable. The major issues currently on the *explicit* SALT agenda are the following:

(1) How is the MIRV launcher limit of 1,320 to be verified?

- The American answer is to establish firm, arbitrary, but unambiguous "counting rules." Missiles tested successfully "four or five times" in a MIRV mode will be presumed to be MIRVed. Also, since the MIRV-able generation of Soviet ICBMs will not fit into unmodified silos, all missiles deployed in modified silos will be presumed to be MIRVed. An additional possibility is that certain *specified* geographical areas will be presumed to contain only MIRVed ICBMs. Equally arbitrary, but conveniently unambiguous, "counting rules" are proposed for MIRVed SLBMs (which the Soviet Union has yet to deploy).

- The Soviet answer is to employ the same methods endorsed for SALT I: namely, national technical means of verification. Complex counting rules should not appear in treaty language, they say. The American proposals are unrealistic: The initial deployment of SS-18s is *not* of the MIRVed version, while the SS-11 Mod 3 (with 3 MRVs) requires a minor silo modification. "National technical means" can adequately detect MIRV launcher complexes.

(2) Is the Backfire "B" a strategic offensive vehicle in the meaning of the Vladivostok Accords?

- The American answer is *yes*, because when aerially refueled, Backfire is a true intercontinental bomber. But even unrefueled, Backfire can strike at North America and land on Cuban airfields. Since Backfire is the next generation Soviet bomber, if it is excluded from the SALT II ceiling the Soviet Union could get a free ride with respect to one leg of its strategic triad.

- The Soviet answer is *no*: Backfire is not an intercontinental bomber since it cannot strike at North America and return, unrefueled.

(3) Are long-range cruise missiles to be covered within the SALT II ceiling?

- The American answer is *no*. The agreement in Vladivostok was only that air-launched ballistic missiles with ranges reportedly in excess of 360 miles were to be included in the 2,400 ceiling. In principle, it might be desirable to constrain long-range cruise missile deployment, but no one knows how to tell a tactical cruise missile from a strategic one, or a cruise missile with a conventional warhead from a nuclear one.

- The Soviet answer is *yes*. If cruise missiles are not included in the SALT II ceiling, then the United States will obtain a free ride for its potential ALCM and SLCM deployments—which would negate the whole purpose of SALT II.

(4) What is a "heavy missile"?

- The American answer is that missile systems that have a volume significantly greater than the SS-11 Mod 1 (*i.e.*, the SS-17 and SS-19) are clearly candidates for "heavy missile" status. The purpose in designating a heavy missile sublimit in the Interim Agreement of SALT I was to limit Soviet missile payload and thereby constrain Soviet hard-target counterforce potential. If SS-17s and -19s are permitted as modernizing replacements for the SS-11 on a one-for-one basis, then the rationale for a "heavy missile" sublimit would be frustrated.

- The Soviets do not appear to have a direct answer to this question. They seem to consider it a complex technical matter that should not be permitted to muddy the waters of the SALT negotiations.

(5) How is a commitment to negotiate force reductions in SALT III to be written into SALT II?

- The American answer is that a simple, strong, and unqualified statement of intent be included.

- The Soviet answer is that a statement of intent should certainly be included, *but* that statement must be linked to an explicit determination to resolve certain items of unfinished business carried over from SALT II: specifically, Forward Based System (FBS) and third-party strategic nuclear forces.

The above list is by no means exhaustive (*i.e.*, alleged "violations" of SALT I are not mentioned), but it does contain the major items in dispute. What readers should ask themselves is not "What is likely to be the character of an equitable SALT II treaty?" They should ask: "Is an equitable, and *negotiable* SALT II treaty at all likely to be responsive to the prospective strategic problems of the United States? Which Soviet developments are sources of anxiety to us? And what, if anything, does SALT II promise to contribute to the alleviation of those anxieties?"

—Colin S. Gray

The Soviets appear to understand, better than do the NATO allies, the importance of air bases along the Mediterranean. Now, even more than in World War II . . .

Who Controls the Air Controls the Med

By Gen. T. R. Milton, USAF (Ret.)

In the month of August, everyone in Europe whose status permits, and who can afford it, is on a Mediterranean beach. The Med, that beautiful blue inland sea, is truly one of Europe's treasures. It has also become, lately, a pain in NATO's bottom. Or, that is to say, its southern flank.

Some years ago, the Mediterranean was clearly dominated, militarily, by NATO forces. The US Sixth Fleet was unchallenged as it moved serenely about those sunny and historic waters. Wheelus Field in Libya was the gunnery camp for all US Air Force units in Europe. Greece and Turkey had patched up their old feud and were serving together under a complicated NATO hierarchy. And Portugal, just a few weeks ago, was poor, preoccupied with war in Mozambique, but unquestionably a solid NATO partner. As we all know, there have been some changes made.

The Italian Communists, after years of prominence but little power, have finally won the right to a voice in the government. While they seem less menacing and doctrinaire than their Portuguese comrades, they are Communists nonetheless and thus anathema to NATO. Then there are the Portuguese, whose troubles are still unfolding. Where they will end up vis-à-vis NATO is still one of the great uncertainties. Sooner or later Greece will probably return to full-fledged NATO status, but it is not there now. And Turkey. More about it later.

The change that seems to attract most attention has been the rapid increase in the Soviet Mediterranean fleet. This visible evidence of growing Soviet power has become the very symbol of NATO's weakened southern flank. And that is what it really is—a symbol—for while NATO is clearly losing strength in the Med, and is in dan-

ger of losing more, the Soviet Navy is not the prime source of danger. It seems fairly evident that the Soviets contemplate a little gunboat diplomacy in the Indian Ocean and the Persian Gulf. The reopening of the Suez Canal makes this possible. Meanwhile, the Mediterranean remains a pleasant theater for any peacetime navy, the Soviets included, to practice the diplomatically useful pastime of port visits and showing of the flag.

But the time has passed when the Med could serve as a major theater for naval surface warfare. Not, at any rate, with enemy land-based air on the perimeter and with nuclear attack submarines taking advantage of the difficult submarine detection problems in that sea. Even in World War II, with the speed and range limitations of that era, land-based air was a decisive factor. And even before that, in the days of Mussolini's *Mare Nostrum*, Italy's dominance of the Med was based on its air force and its submarines.

Control of the Med in war, or détente in the Med in peacetime, more and more will become a function of land-based air forces. It is increasingly evident that the Soviets are not unaware of this, as demonstrated by Mr. Kosygin's visit to Libya in May, reportedly to barter Soviet arms for the right to set up Russian air, land, and naval bases looking out over the Med. It is not so evident that NATO, or for that matter, much of the US, is equally aware of the importance of air bases along the Mediterranean.

Witness the continued hostility of the Northern European Allies to any mention of Spain in NATO. Every attempt we have made, on either the military or diplomatic level, to bring Spain a little closer to the Alliance, has run into a stone wall. And yet the bases in Spain are as essential to NATO's posture in the

Mediterranean as any elements of the Sixth Fleet. With tanker support, Torrejon, outside Madrid, can send its fighters the length of the Med and back in a few hours. The Navy base at Rota is a vast and sophisticated complex commanding the Straits of Gibraltar. The base at Zaragoza has taken the place of Wheelus as the US gunnery range for Europe. It is essential to NATO fighter readiness and would be extremely difficult to replace.

And yet, when President Ford, who obviously had these things on his mind, visited Spain, he was roundly and predictably criticized by television and newspaper commentators for his display of friendship to General Franco.

The bases in Turkey are another case in point. They are also an essential element of our Mediterranean stance. Yet, we are well on our way to pressuring ourselves right out of those bases.

Modern Turkey was founded by Ataturk, on, among other things, a distrust of foreigners. Over the years, that distrust has remained a factor in Turkish relations with the world. The United States came very near achieving the unique status of a trusted friend and ally until the Congress suspended military assistance. Now, with her forces dependent on a fast-disappearing US logistic pipeline, the Turks are evidently considering, and seriously, a return to xenophobia.

Someone—I think it was the French Ambassador to NATO—once told me his formula for détente: It is, he said, an equation, the product of capability and credibility. By credibility, he meant the will to use your power if the need arose. Clearly, in this equation for détente, capability is equally important.

In the Mediterranean, the bases are vital to a capability. And we all know what anything times zero is. ■

Assessing US Counterinsurgency

Trial in Thailand, by George K. Tanham. Crane, Russak & Co., Inc., New York, N. Y., 1974. 175 pages. \$10.50.

For much longer than most of us are aware, Thailand has been subjected to subversion—Communist and otherwise, but now predominantly Communist-inspired. Yet however things may turn out in Southeast Asia, the case of Thailand deserves special and separate consideration, if for no other reason than that nation is the only one in the region to have avoided domination by any Western power throughout its history.

The first part of the book introduces the general reader to Thailand, its history, and the origins of insurgency in Thailand going back to the 1920s. The second part treats the role of the United States in helping the Thais to counter growing insurgency over the past decade. A concluding chapter offers "some reflections" on the effectiveness of US aid to Thailand in particular and the American approach to counterinsurgency (CI) in general.

The author, now the Rand Corporation's top man in Washington, has been involved in counterinsurgency since the late fifties, his research and experience concerning Vietnam having appeared in two earlier books: *Communist Revolutionary Warfare: From the Vietminh to the Viet Cong* (1961; rev. ed. 1967) and *War Without Guns: American Civilians in Rural Vietnam* (1966). More recently, from April 1968 to May 1970, he was assigned to the embassy in Bangkok as Special Assistant for Counterinsurgency (SA/CI).

A certain malaise or sense of *déjà vu* grips Tanham's pages. He can show that the insurgency is growing more rapidly than is concern for it, whether the concern be that shown by the Thai or US governments. He is scrupulously careful to avoid simplistic comparisons with Vietnam. His main concern—implicit throughout; explicit only in his Foreword—is with the problem of coordinating US policies abroad among the myriad quasi-indepen-

dent US bureaucracies that seem all but inevitably to become involved. In Thailand alone, the roster of participants includes the State and Defense Departments in their various incarnations (AID, MACTHAI, USOM, ARPA, Hq. 7th/13th Air Force, USSAG, and SUPTHAI) along with the CIA and USIS. In the absence of a common doctrine for counterinsurgency—let alone a doctrine relevant specifically to the Thai culture—how, he asks, can we expect our assistance to be effective, especially in the face of the conflicting goals and ambitions of all the various agencies involved?

Based on my own experiences in Vietnam, I would say simply that we cannot; that the absence of a common doctrine and the presence of competing, all but feudal, bureaucracies must doom US efforts from the very beginning. The US style is to insist that more (dollars, men, equipment, etc.) will solve the problem, *whatever* the problem; which is another way of saying, I guess, that the methodology of success in World War II is somehow relevant to CI situations.

Tanham's comments near the end about the US style in attempting to assist other countries bear reading by all who might become so involved. How much good they will do when the various Washington fiefdoms begin applying pressure on their operators in the field, however, is another question, the answer to which remains to be found.

—Reviewed by Lt. Col. David Maclsaac, Dept. of History, USAF Academy.

The Ultimate Military Secret

The Ultra Secret, by F. W. Winterbotham. Harper & Row, New York, N. Y., 1974. 199 pages. \$8.95.

It's small wonder that relatively few novels have been written about World War II. Such was the nature of that cataclysmic event that no mere fictional thriller could match what occurred in real life.

A case in point is this ultimate in spy stories, the factual revelation of an astounding military secret that

has been kept from the public for more than thirty-five years.

Mr. Winterbotham describes how, at the outbreak of World War II, British Intelligence was able to secure an exact duplicate of Enigma, the Germans' complex and supposedly unbreakable coding device.

After an intensive effort, a brilliant group of British mathematicians and cryptanalysts solved Enigma's mystery and invented a machine—dubbed Ultra—to decode its messages. Thus, throughout the war, this absolutely first-rate intelligence—the top-secret radio communications between Hitler and his generals in the field—was in Allied hands. A fantastic intelligence coup.

From Dunkirk to Alamein, from Normandy to the battles across Europe, the Allied commanders knew in advance almost every German move. In fact, says the author—ostensibly an RAF wing commander during the war but in reality the mastermind of the Ultra organization—the Allied chieftains became so dependent on Ultra that they were caught flat-footed in the Ardennes after Hitler decreed radio silence prior to that offensive.

Of parallel interest were the incredible lengths to which the Allied leaders went to keep the enemy from guessing Ultra's existence. Probably the most shocking: Ultra knew that the Luftwaffe had targeted Coventry, yet the city was not forewarned.

Mr. Winterbotham gives Ultra generous credit for the elimination of the U-boat menace, and for several crucial victories over the Japanese, who were using German-built Enigma machines.

It may well be, as the author contends, that Ultra was instrumental in the victorious conduct of the war. But the book also raises some suspicions that the information derived from Ultra was not always used to best advantage, resulting in Allied blunders and the unnecessary loss of life. One example, the failure to close the Falaise gap, resulting in the escape of 30,000 Germans.

In any event, much of what historians thought was true of events during the war years will have to be viewed in a new context. And, inevitably, some reputations will suffer.

Finally, the Ultra story is here confined to a tight 199 pages. One would hope for an expanded treatment of this fascinating story of the war years.

—Reviewed by William P. Schlitz, Assistant Managing Editor, *AIR FORCE Magazine*.

New Books in Brief

Assault in Norway, by Thomas Gallagher. Scientists of the Manhattan Project assumed the Germans had a two-year lead in developing an atomic bomb. The only way to slow them down was to destroy their source of one essential ingredient—heavy water. This was a hydro plant on a massive cliff in Nazi-occupied Norway. Here is the true story of the daring commando operation to get an Allied team into the heart of the plant. The author interviewed many of the people involved. Maps and index. Harcourt Brace Jovanovich, Inc., New York, N. Y., 1975. 234 pages. \$6.95.

The Bayonet: A History of Knife and Sword Bayonets, 1850-1970, by Anthony Carter and John Walter. A survey of the development of the bayonet from the American Civil War and Crimean War, through two world wars, to Vietnam. Some 250 drawings. Appendices cover British and Commonwealth bayonet marks and American and German manufacturers' marks. Charles Scribner's Sons, New York, N. Y., 1975. 128 pages. \$9.95.

China and Southeast Asia—The Politics of Survival, by Melvin Gurtov. A study of China's relationships with Cambodia, Burma, and Thailand. The author examines each country and discusses internal struggles in China and their impact on Chinese policy. He concludes that China's ideological and practical needs dictate her policy, which has resulted in coexistence with neutralist governments and support to revolutionary movements. In evaluating Asian security, the author contends that the balance of power concept is obsolete. A well-documented study with tables, and maps. The Johns Hopkins University Press, Baltimore, Md., 1975. 248 pages. \$3.65.

Firepower: Weapons Effectiveness on the Battlefield, 1630-1850, by Maj.-Gen. B. P. Hughes, C.B., C.B.E. The author surveys firearms used for two centuries on the

world's battlefields, describing their development, deployment, capabilities, and theoretical effects. Diagrams and graphs depict troop formations and military evolutions. There are fifty maps and many illustrations. Index and bibliography. Charles Scribner's Sons, New York, N. Y., 1975. 174 pages. \$12.50.

German Armoured Cars of World War Two, by John Milsom and Peter Chamberlain. Illustrated history of Germany's armored vehicles from their secret beginnings in the late 1920s, to the perfected models of World War II. More than 200 photographs of four-, six-, and eight-wheeled vehicles with details on armor, armament, engines, suspension, performance, and dimensions. Charles Scribner's Sons, New York, N. Y., 1975. 128 pages. \$10.

Jane's Pocket Book of Military Transport and Training Aircraft, edited by John W. R. Taylor. Pocket reference book with a photograph, three-view drawing, and pertinent facts and figures about each plane in both categories of aircraft. Macmillan, New York, N. Y., 1975. 262 pages with index. \$6.95 hardback, \$3.95 paperback.

The Observer's Book of Aircraft, compiled by William Green. Twenty-fourth annual edition of this pocket reference book with pertinent facts and figures, photographs, and three-view drawings of 137 aircraft currently in production, under test at press closing, or scheduled to begin testing in 1975. Index. Frederick Warne and Co., New York, N. Y., 1975. 255 pages. \$1.75.

The Observer's Soviet Aircraft Directory, by William Green and Gordon Swanborough. A reference to Soviet aircraft development over the past quarter century. It details Soviet systems of designating aircraft; provides information on aircraft types, both civil and military; and describes many of the aircraft that competed unsuccessfully with those ordered into production. Illustrated with photographs and drawings, the book includes appendices on the organization and current status of the Soviet Air Force and national airline. Frederick Warne and Co., New York, N. Y., 1975. 256 pages with index. \$7.95.

Oil, Politics, and Seapower—The Indian Ocean Vortex, by W. A. C. Adie. This monograph examines the growing involvement of the

great powers in the politics of the oil-rich, politically unstable Indian Ocean area. The author focuses on Soviet and Chinese ambitions. At stake, he says, is the emerging confrontation between "developed" and "developing" countries—a situation both Communist superpowers seek to exploit. Three appendices detail major facilities of outside powers in the region. Bibliography and list of strategy papers from the National Strategy Information Center. Crane, Russak and Co., New York, N. Y., 1975. 98 pages. \$2.95.

Soviet Naval Power—Challenge for the 1970s, by Norman Polmar. An authoritative account of the Soviet naval forces, by an editor of *Jane's Fighting Ships*. The author outlines how Soviet naval forces together with merchant, fishing, and research fleets further economic, political, and military policies of the USSR. In analyzing Russia's transformation from a land power to a major seapower, the author reveals the roles Stalin, Khrushchev, and Gorshkov played in the growth of the Soviet navy. Weaknesses in current Soviet naval power are discussed. Bibliographical note, and appendices covering Soviet commanders, comparative naval strengths, data on Soviet ships, world shipyards, and world merchant fleets. Crane, Russak and Co., New York, N. Y., 1974. 129 pages. \$5.95 hardback, \$2.95 paper.

Thunderbolt in Action, by Gene B. Stafford. A short history of the P-47 Thunderbolt complete with pictures, drawings, and text. Narrative begins with the developmental history of the craft, from the P-35 to the XP-72, and continues with her story in the theaters of World War II. Squadron/Signal Publications, Warren, Mich., 1975. 50 pages. \$3.85.

Uniformed Services Almanac, compiled and edited by Lee E. Sharff. Seventh annual edition with facts on pay and benefits for all officers and enlisted men in US military service. Topics include: dependency and indemnity compensation; home-buying for servicemen; insurance; legislation of interest to military personnel; pay; retirement; social security; service statistics; taxes; and veterans benefits. A complete, up-to-date reference source. Uniformed Services Almanac, Washington, D. C., 1975. 154 pages. \$1.75.

—Reviewed by Robin L. Whittle

The Bulletin Board

By John O. Gray

MILITARY AFFAIRS EDITOR, AIR FORCE MAGAZINE

Star, Eagle Retirements Analyzed

The Air Force is losing ninety general officers to retirement this calendar year, including sixty-five this summer. That's eleven more than last year but five fewer than in 1973. Voluntary star retirements are up.

Among full colonels, USAF's projection for 1975 is only 1,041 retirements, 300 fewer than last year and 230 fewer than two years ago.

These and related official statistics that have been provided to AIR FORCE Magazine tend to scotch rumors that Air Force's military leadership is being heavily eroded, especially this summer. One erroneous rumor echoing through Pentagon corridors in June held that "more than 140" USAF generals were departing in July, August, and September.

Here, according to Hq. USAF, is the actual picture:

The three summer months are bringing forty-nine voluntary and sixteen mandatory star exits. The full-year statistics follow:

Year	Mandatory	Voluntary	Total
1972	38	41	79
1973	51	44	95
1974	42	37	79
1975	32	58	90

This is the "largest number of voluntary retirements in recent

years, but not the largest number of total retirements," USAF said. "We believe that the majority of our voluntary retirements are driven both by the pay inversion and the executive salary ceiling," authorities in the office of the Deputy Chief of Staff for Personnel, Hq. USAF pointed out.

That ceiling limits basic pay to \$36,000; all four- and three-star and some two-star officers have reached it. At press time, Congress was taking action to correct the pay-inversion snafu. That handled, service members could retire after the October 1 active-duty pay raise and not receive less pay than summer retirees. Few people who had their exit papers in for summer retirement were expected to try to withdraw them, however.

USAF general officer strength, meanwhile, will drop to around 385 following the July-August-September retirements, and to 380 or perhaps lower by the end of 1976, officials stated. "Actual GO requirements," which the service placed at 537 just a few months ago, will be reassessed this fall.

Since only forty-two colonels and thirty-seven BGs were chosen for advancement by the most recent one- and two-star promotion boards, "won't supplemental selections be needed to fill all the vacancies?" AIR FORCE Magazine asked. None

is contemplated, though the Secretary can "convene supplemental boards if required," USAF replied.

The star retirements this year are heavy in both the four- and three-star ranks. But the Air Force said thirteen of the former and forty-three of the latter will continue to be "authorized and assigned."

This summer, authorities said, Air Force is retiring 656 full colonels, including 597 voluntarily. This compares with the same period last year (when the pay inversion problem first surfaced), when 611 of 716 retiring colonels departed voluntarily.

The colonels' statistics also reveal that retirements for disability are trickling down to almost nothing. Only eight percent of the O-6 retirements in 1973 were for disability, and the figure dropped to four percent last year. In April, May, and June this year, 200 colonels retired, but only eight for disability reasons.

Defense-Backed Legislation Drags

There are about eighty separate proposals in the Defense Department's "manpower legislative program" for the 94th Congress. They include measures which, if enacted, would affect from one person—e.g., a medal for Brig. Gen. Charles E. Yeager (Ret.)—to, eventually, hundreds of thousands—e.g., the Retirement Modernization Act.

Eighteen of the proposals would impact, usually favorably, on Reservists and Guardsmen.

But people measures move slowly, often not at all. Some are studied for months, even years within the Pentagon; others wait for lengthy periods at the Administration's Office of Management and Budget. Congress ignores still others. Sometimes Defense withdraws a few.

Cost again is the major stumbling block, as the Administration frowns on any new personnel-manpower project that carries a price tag. And bills lacking Administration support rarely get anywhere.

With half the year gone, here is

Early in July, Capt. Jane L. Holley became the first woman to graduate from the USAF Test Pilot School, Edwards AFB, Calif. While pursuing her studies in flight-test engineering, she spent more than 100 hours flying in different types of aircraft. Captain Holley joined USAF in 1971, via Auburn University AFROTC, where she majored in aerospace engineering.





The 1975 graduating class of senior military at the famed US Army War College, Carlisle, Pa., its fifty-ninth, included a traditional complement of Air Force officers, here shown being congratulated by AFA Treasurer Jack Gross upon receiving their diplomas from the Commandant, Maj. Gen. DeWitt C. Smith, Jr., and Gen. Andrew J. Goodpaster, commencement speaker. Rear rank, from left, faculty Lt. Col. D. Blake, Lt. Col. J. Strasser, Lt. Col. S. Demchuk, Lt. Col. D. Underwood, Col. R. Autery, Lt. Col. C. Brown, Lt. Col. R. Stephenson, Col. J. Schmidt, Lt. Col. S. Long. Middle rank, from left, senior USAF faculty Col. R. Pomeroy, Lt. Col. J. Lott, Lt. Col. L. Kroenke, senior USAF student Col. B. Van Horn, Col. B. Fioritto, Col. R. Mathiasen, Lt. Col. B. Allen, Col. R. Dilger, faculty Col. M. Connelly. Front, with Mr. Gross, Lt. Col. J. Duffy.

the status of the more important Defense-backed, people-type proposals of interest to USAF active-duty members, Reservists, and civilians:

Withdrawn from Program: Retired pay inversion relief for Civil Service retirees.

Still in Defense: Tuition assistance for members of the Reserve Forces; the Reserve Officer Personnel Modernization Act; selection of senior officers for continuation or retirement; protection of Guardsmen in case of litigation; allow certain Reserve Force members to establish individual retirement programs; and family separation allowances for E-4s and below. (The last cited, however, is dead for the year—because of its large cost.)

Awaiting OMB Approval: Reserve Retirement Modernization Act; authorize extended retention of Reserve technicians; allow recruitment of certain active-duty retirees in Reserve Forces; greater medical protection benefits for Reservists; remove limit of sixty points per year (for retirement credit) for Reserve Forces inactive-duty training; allow Air Guard officers to compete for "overall vacancy" colonel; allow Air Reserve officers leaving active duty to assume the highest temporary grade held; and reduce the marriage requirement under the

Survivor Benefit Plan to one year.

In Congress: Defense Officer Personnel Management Act (initial hearings held); authorize call of selected Reservists to active duty other than during emergency; Retirement Modernization Act; remove limit on appointments to two-year ROTC program; increase military travel allowances; continue \$100 per month special payment to military veterinarians and optometrists; and amendments to the Aviation Career Incentive Act. The latter would allow flyers to count aviation cadet time for operational flying duty and aviation service for pay purposes, and strengthen language to cover "save pay" for Reservists.

Kin Dental Care Shrinks

A nine-year-old law has permitted the military establishment to provide routine dependent dental care in the US "where adequate civilian facilities" are not available. To rate on-base care, there must be not less than one dentist per 2,000 population within a thirty-mile radius of the base. "Unusual and geographic conditions and transportation factors" are also considered, but not the stiff fees civilian dentists charge.

Until recently, 106 Stateside installations, including thirty-nine USAF sites, were on the approved

list. Then came a Defense announcement: Thirty-three locations, including thirteen Air Force installations, no longer meet the criteria.

Effective July 1, these USAF bases were cut from the program: Elmendorf and Eielson AFBs, Alaska; Mt. Laguna AFS and Point Arena AFS, Calif.; Dover AFB, Del.; Moody AFB, Ga.; Whiteman AFB, Mo.; Nellis AFB, Nev.; McGuire AFB, N. J.; Shaw AFB, S. C.; St. Albans AFS, Vt.; Bedford AFS, Va.; and Osceola AFS, Wis.

The big shockers were Elmendorf and Eielson, where, USAF authorities fear, many families will avoid civilian dentists because of cost, and acquire severe dental problems by the time their tours end.

AFA Councils Back USAF's Career Enhancement Drive

AFA's Airmen and Junior Officer Advisory Councils are actively supporting the service in its new drive for ways to make USAF more productive and a better place in which to live and work.

This effort began last spring with formation of the Air Force Management Improvement Group (MIG) at Hq. USAF, under Maj. Gen. Kenneth L. Tallman (see June '75 "Bulletin Board"). By midyear, the MIG was examining a host of ideas for en-

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hancing the quality of life in the Air Force. It was also conducting five surveys of thousands of USAF military and civilian members to determine how they feel about it.

In early June, AFA's Total Force Advisory Council, including members of the airmen and junior officer groups, met at the Marriott Twin Bridges Motor Hotel, Washington, D. C. There, in response to a request from General Tallman, the latter two groups agreed to help the MIG effort by discussing the improvement drive with their contemporaries throughout the Air Force and searching for helpful ideas and suggestions.

The councils plan to report to the Improvement Group at the AFA Convention next month.

Association President Joe L. Shosid opened the two-day June conclave by welcoming council members and guests, and he was toastmaster at the June 5 luncheon. Separate presentations were made by Maj. Gen. William Lyon, Chief of the AF Reserve; Maj. Gen. John J. Pesch, Director of the Air National Guard; Maj. Gen. George E. Schafer, the new USAF Surgeon General; John T. McConathy, Director of USAF Civilian Personnel; and Brig. Gen. Robert B. Tanguy, Deputy Director of Legislative Liaison. Assistant Secretary of the Air Force (Manpower and Reserve Affairs) David P. Taylor was the speaker at the June 6 luncheon, which was attended by many USAF leaders.

The Total Force, Airmen, and Junior Officer Advisory Councils meet periodically to examine problems affecting all USAF members and make recommendations to the Association leadership. These frequently surface as AFA resolutions and special projects.

AFA Defends Commissaries Again

AFA President Joe L. Shosid defended the commissary system during mid-June hearings on the explosive issue before the House Defense Appropriations subcommittee. His statement was slightly expanded over the one he delivered earlier to a House Armed Services subcommittee on the same subject

(see July issue, p. 84). He stressed that the bulk of commissary patrons are active-duty and retired enlisted members and their families, plus widows and disabled veterans. Reducing the commissary subsidy—the basic issue—would amount to a cut in their pay, he charged.

While the lawmakers, at press time, had not arrived at a decision on the commissary issue, informed sources leaned toward the belief that Congress will not allow customer savings to be reduced.

CAREERS—"A New Way of Life"

In FY '74, the Air Force reenlisted 19,259 airmen against a goal of 19,274. Almost perfect? Not by a long shot, because it included a surplus of more than 3,000 in some jobs, a similar shortage in others.

"We got plenty of people—but not where we needed them," USAF says in a new briefing on CAREERS (Career Airmen Reenlistment Reservation System), the broad program laid on a year ago to straighten out the over-under re-up problem. The USAF-wide briefing is beamed at first sergeants, unit commanders, wing commanders, their staffs, supervisors at all levels, and the first termers themselves.

CAREERS provides that first termers can re-up only to meet valid requirements by number and job field. The briefing underscores retraining, because it is only through retraining that officials balance the career fields. And retraining is the only way more and more airmen apparently will be able to remain in uniform. "It's a new way

of life" for thousands of first termers, Air Force says.

Headquarters, in related actions on the enlisted front, recently:

- Cut FY '76 selective reenlistment bonus payments. It removed (1) twenty-seven AFSCs from the SRB list, including the hefty aircraft maintenance AFSC 431X1; and (2) reduced the SRB "multiple levels" in nineteen skills. The latter step, under the complex bonus payment formula, reduces these awards substantially. On a happier note, officials said that some first- and second-term airmen who had extended their enlistments now will get new or additional SRB payments. CBPOs have details.

Maximum SRBs payable heretofore have been \$12,000, though a more typical bonus might have run about \$5,000 covering a five-year period, USAF suggested.

Reason for the SRB reductions: "favorable reenlistment rates" and the success of the above-cited CAREERS program. As one high USAF personnel official put it, "we will pay for only what we need..." SRB skills are continually subject to change, so some of the cuts could be restored later. But USAF said don't count on it.

- Dispatched a plea for career NCOs with communications-electronics maintenance, communications center operations, or radio operations experience, to retrain into AFSC 307X0, telecommunications systems control specialist/attendant/technician. These are mostly overseas jobs, under what is called the "Palace Telecom" volunteer program. Headquarters calls



Maj. Gen. George E. Schafer, USAF's Deputy Surgeon General, second from right, checks the schedule of the Aerospace Medical Association's scientific meeting in San Francisco recently with four Air National Guard medics.

All from Chicago's O'Hare International Airport, they are, from left, Lt. Col. Bernard F. Reiland, flight surgeon; Maj. Edgar Fox, optometrist; Col. James A. Sandrolina, Illinois air surgeon; and Capt. Mae D. Mercereau, flight nurse. Dr. Schafer, who presided over the meeting, is scheduled to become USAF Surgeon General on August 1.

Surveys and Single-Salary Studies

High-level government officials who want to reduce or eliminate certain traditional military benefits should take a look at a recent survey the Air Force conducted. The findings on airman and officer "attitudes and career intent," culled from the 25,000 members queried, are worth noting.

At the same time, military personnel and their leaders might bone up on the details of the "single-salary" system. Some quarters envision it as a replacement for the current hodgepodge of pays and allowances.

First the survey. Air Force asked the participants, representing all grades with various lengths of service, what they would do if three benefits—exchanges, commissaries, and dependent medical care—were withdrawn (as many service people fear the government intends to do).

Thirty-one percent of the first-term and career airmen, forty-nine percent of the second-termers, and twenty-eight percent of the officers said they would switch from "career to noncareer status." In other words, depart instead of staying in as they had planned.

Considering that many of the others surveyed were noncareerists and still others had completed more than twenty years of service, the potential dropout figure is alarming. With feelings concerning the perceived erosion of benefits running equally high in the Army and Navy, similar intentions could be expected throughout the entire military establishment.

Even if only half those who said they would depart actually did so, under the circumstances cited, the services would find themselves in serious manning trouble. The message from the survey is clear: The rank and file of the people in uniform, rightly or wrongly, find the threats to traditional military benefits intolerable, and they'll continue to resist. Indeed, the recent explosion over the potential boost in commissary prices may resemble mere ripples on a pond, if the attacks continue or intensify. Certainly the service community will be more alert to flag every suspected step in that direction.

For example, no sooner did the Pentagon in early June announce a cut in the number of "remote" Stateside bases authorized to provide dependent dental care than a stiff reaction set in. In-service criticism surfaced especially over the Pentagon's decision to halt such care at Elmendorf and Eielson AFBs in Alaska.

But that was hardly surprising. A high USAF medical official, who should know whereof he speaks, noted that the handful of civilian dentists in those two Alaskan areas charge \$50-\$60 per appointment! And, as the official observed, "families stationed there will be coming back with mouths full of cavities. . . ." In other words, they'll go without dental care.

Of related significance is the aforementioned "single-salary" approach to military pay and the increased attention it is getting. An important plug for the concept appeared in a recent study by Martin Binkin for the Brookings Institution. Binkin, a retired USAF colonel and an expert on military personnel-manpower matters, sees the present military pay system as a wasteful "muddle," crying for reforms. His study makes much sense.

And he outlines, in considerable detail, a way out, although the service community is not likely to endorse his findings.

The Binkin-Brookings report notes serious inequities between single and married members' compensation, with the latter faring far better. Indeed, the larger the family, the larger the benefits provided them and the larger the cost to the government for housing, medical care, separation allowances, travel-transportation outlays, etc.

The answer, according to Binkin and other "salary" proponents, is a single pay scale for all military members, regardless of marital status. It would replace the present "Regular Military Compensation" composed of basic pay, housing, and subsistence allowances, and the "tax advantage" realized by those allowances. This single salary would be generally higher than the current total of RMC. But would it prove sufficient to overcome the objections the switch in systems embodies?

The report also endorses the controversial reforms to the present retirement system contained in the bewildered Retirement Modernization Act. The Pentagon has been trying to get that one through Congress for nearly three years. And Binkin goes RMA one better—he suggests that service people should contribute to their retirement fund, just as civil servants do.

The Binkin-Brookings reports surface at a time when the Defense Department's own high-powered pay study—the Quadrennial Review—is searching for reforms and savings throughout the dozens of existing military pay items. The Quadrennial Review could be influenced to some degree by the Brookings study, even though the latter has no official standing with the government.

It could also conceivably exercise some influence on the Defense Manpower Commission's exhaustive study of military personnel, although the DMC is looking to the Quadrennial Review for most of the answers on compensation.

From these and other probes into military and federal civilian compensation, a single-salary proposal could well emerge within the government during the next few years. At least some elements of Congress would welcome the plan.

While the general idea contains merit, it's the details that are the stumbling blocks. A single salary would be taxable, thus ending the cherished tax exemption on allowances. Commercial store prices would probably be charged in the exchanges and commissaries. Fees undoubtedly would be laid on for dependent outpatient service at military hospitals. Military Social Security payments might be reduced and all personnel required to contribute to their eventual retirement.

Each of the above alterations, of course, is anathema to most military people and their families. They rendered their feelings—about ninety-nine percent opposition—on just such points eight years ago when an earlier Quadrennial Review recommended a single-salary plan similar to the Brookings plan. But Defense quashed that one, partly because of the in-service distress over it.

Still, the military-pay setup is becoming more complicated, confusing, and wasteful each year. Pay errors proliferate. More and more members and potential recruits have little idea of what actual pay rates are. Large families benefit unduly, bachelors are penalized. Reforms across the board are sorely needed.

Acceptance by the military community of the changes in benefits that a switch to the "single-salary" concept would require could hinge on the size of the new salary. How large should it be? What exactly would it take to offset the loss of certain traditional benefits?

Certainly, in view of the push the single-salary idea is receiving, these and related aspects should be probed in detail, with the troops as active participants. And where better than via the periodic surveys the services conduct? USAF has long used the survey device to help determine how members feel about promotions, transfers, etc. The answers have helped planners avoid wrong turns in many areas; they might do an equally important job in the benefits-compensation field. ■

The Bulletin Board

them "challenging" positions for NCOs "in surplus specialties . . . [who] want a head start in a new, interesting, and related field. . . ." CBPOs have details.

• Intensified the spotlight on first sergeant job opportunities by announcing plans to double training slots in the first sergeant training course at Keesler AFB, Miss. This will be effective next January. Also, NCOs in AFSC 906X0 now performing top-kick duties can attend the course.

TOPLINE, DOPMS Closely Linked

An updated Volume II, better known as TOPLINE, to the USAF Personnel Plan came off the

presses recently. Career officers should check it out closely, since it contains the service's career blueprint for officers in terms of the force structure, the rated force, new officer input, the promotion system, grade ceilings, and much more.

One new section gets into pending personnel legislation, principally the key features of the Defense Officer Personnel Management System (DOPMS) which cover promotion opportunity, an all-Regular force at the eleven-years' service point, early retirement and reduction of tenure for senior officers, and the single promotion system. The new TOPLINE pamphlet spells out which DOPMS features have been implemented.

The House Committee and the full House are expected to approve some of DOPMS this summer.

Short Bursts

An encouraging sign for military medicine: Some physicians being recruited from civilian life, includ-

ing former USAF doctors, say a major reason they're suiting up is that they "can't stand the paperwork in private practice." That's the word from an informed Pentagon source. That paperwork isn't likely to subside.

A discouraging sign for military medicine: Military health professionals seek malpractice insurance because they could be hit "for an enormous sum." But the skyrocketing cost of such coverage has "significantly diluted the value of incentives for a career in the armed forces" and "is creating a severe morale problem," according to Brig. Gen. Walter D. Reed, USAF's Assistant JAG. He's been working on legislation, which is making headway in Congress, to give military medics protection against malpractice suits.

Also moving ahead on Capitol Hill are measures to (1) raise survivors' Dependency-Indemnity Compensation payments by an average of ten percent, and (2) hike disability compensation for veterans

Senior Staff Changes

PROMOTIONS: To Lieutenant General: Maurice F. Casey. Named temporary Major General: Walter D. Druen, Jr.; Lovic P. Hodnette, Jr.; Thomas M. Sadler; Richard H. Schoeneman; and Winfield W. Scott, Jr.

Named temporary Brigadier General: Walter H. Baxter III; Rufus L. Billups; Carl H. Cathey, Jr.; Edgar A. Chavarrie; Robert F. Coverdale; William D. Curry, Jr.; Phillip C. Gast; Don M. Hartung; James R. McCarthy; Edward J. Nash; George K. Patterson; Richard G. Rumney; Robert Scurlock; James W. Stansberry; Leroy W. Svendsen, Jr.; and Daryle E. Tripp.

RETIREMENTS: B/G John C. Bartholf; B/G Richard M. Baughn; M/G Jack Bellamy; L/G Charles W. Carson, Jr.; Gen. Lucius D. Clay, Jr.; M/G Harold E. Collins; M/G Ernest T. Cragg; B/G William J. Crandall; L/G Joseph R. DeLuca; Gen. George J. Eade; M/G Frank W. Elliott, Jr.; B/G Eugene W. Gauch, Jr.; M/G Ralph T. Holland; M/G Roger Hombs; L/G John B. Hudson; M/G George M. Johnson, Jr.; B/G Paul Krause; M/G Henry B. Kucheman, Jr.; M/G Robert W. Maloy; M/G Edward A. McGough III; L/G George H. McKee; L/G John R. Murphy; L/G Edmund F. O'Connor; B/G Walter P. Paluch, Jr.; M/G Paul F. Patch; L/G Robert A. Patterson; Gen. Samuel C. Phillips; L/G William F. Pitts; M/G Harold L. Price; B/G John M. Rose, Jr.; L/G Kenneth W. Schultz; L/G Richard F. Shaefer; M/G Foster L. Smith; L/G William W. Snavely; Gen. John W. Vogt, Jr.; M/G Henry L. Warren; M/G Donald L. Werbeck; M/G Kendall S. Young.

CHANGES: M/G Earl J. Archer, Jr., from Dep. Cmdr., Seventh AF, and C/S, USSAG, Nakhom Phanom RTAFB, Thailand, to Asst. DCS/Pers., Hq. USAF, Washington, D. C. . . . Col. (B/G selectee) John H. Bennett, from Cmdr., 27th TFW, TAC, Cannon AFB, N. M., to IG, TAC, Langley AFB,

Va. . . . B/G Melvin G. Bowling, from Cmdr., 4th Air Div., SAC, F. E. Warren AFB, Wyo., to DCS/Ops., ATC, Randolph AFB, Tex., replacing retiring M/G Henry L. Warren . . . M/G John W. Burkhart, from DCS/Plans, Hq. SAC, Offutt AFB, Neb., to DCS/Ops., Hq. SAC, Offutt AFB, Neb., replacing M/G Billy J. Ellis . . . L/G John J. Burns, from Cmdr., USSAG, and Cmdr., Seventh AF, Nakhom Phanom RTAFB, Thailand, to Dep. CINC, US Forces, Korea, and Dep. CINC, UN Comd., Seoul, Korea . . . B/G Rupert H. Burris, from V/C, AFCS, Richards-Gebaur AFB, Mo., to Cmdr., AFCS, Richards-Gebaur AFB, Mo., replacing retiring M/G Donald L. Werbeck.

M/G (L/G selectee) Maurice F. Casey, from Dep. Dir. of Log. (Strat. Mobility), Organization of the JCS, Washington, D. C., to Dir., J-4, Organization of the JCS, Washington, D. C. . . . M/G Charles G. Cleveland, from DCS/Tech. Tng., Hq. ATC, Randolph AFB, Tex., to Dir., Pers. Programs, DCS/P, Hq. USAF, Washington, D. C., replacing M/G Oliver W. Lewis . . . B/G Richard N. Cody, from DCS/Pers., Hq. SAC, Offutt AFB, Neb., to DCS/Plans, Hq. SAC, Offutt AFB, Neb., replacing M/G John W. Burkhart . . . Col. (B/G selectee) William D. Curry, Jr., from Asst. DCS/Log., Hq. TAC, Langley AFB, Va., to DCS/Log., Hq. TAC, Langley AFB, Va., replacing B/G William R. Nelson . . . M/G Bennie L. Davis, from Cmdr., USAF Recruiting Svc. and DCS/Recruiting, Hq. ATC, Randolph AFB, Tex., to Dir., Pers. Plans, DCS/P, Hq. USAF, Washington, D. C., replacing M/G Kenneth L. Tallman . . . B/G Edward Dillon, from Cmdr., 459th TAW (AFRES), Andrews AFB, Md., to Dep. Chief, AFRES, Washington, D. C., replacing retiring B/G William J. Crandall.

B/G George A. Edwards, Jr., from IG, Hq. TAC, Langley AFB, Va., to C/S, Hq. TAC, Langley AFB, Va., replacing B/G (M/G selectee) Malcolm E. Ryan, Jr. . . . M/G Billy J. Ellis, from DCS/Ops., Hq. SAC, Offutt AFB, Neb., to Dir. of Ops., DCS/P&O, Hq. USAF, Washington, D. C., replacing M/G Otis C. Moore . . . L/G (Gen. selectee) William J. Evans,

from six to ten percent. The House okayed them in late June.

A new early release program allows officers in a wide variety of categories to depart from August 15, 1975, through June 28, 1976. Conceivably, some nonrated officers could get out with as little as fourteen months' service. Flyers who won their wings June 30, 1973, or earlier, are basically eligible, although Headquarters said that each application will be considered individually. AFROTC scholarship officers can apply under this latest early out project. Officials hope there will be a large turnout—to ease RIF woes.

Special assignments. Headquarters is advertising for A1Cs through CMSgts. to apply for tours at the Air Force Academy, Colo., "in nearly every Air Force specialty." Requirements, in AFR 39-11, are rather stiff. And captains, majors, and LCs are invited to apply for AFROTC unit duty. Takes a master's degree. AFR 36-20 contains details.



Stressing the theme, "In the Spirit of '76," Maj. Gen. William Lyon, Chief of Air Force Reserve, recently introduced the Air Force Reserve Bicentennial symbol to his Pentagon staff.

No new family housing units whatsoever in USAF's FY '76 military construction program. That now seems assured, following the Senate's recent rejection of 200 sets of quarters USAF sought for Clark AB, in the Philippine Republic. Those were the only units the Defense Department had allowed Air Force to request.

USAF's latest senior service

school list taps 302 LC selectees, out of 1,850 considered, for attendance at the Air War College and comparable-level schools. Entries begin in FY '77. Interesting statistics: 226 selectees hold advanced academic degrees, all 302 are Regulars, and sixty-eight are currently assigned to Hq. USAF (double the number school-bound from any major command. ■

from DCS/R&D, Hq. USAF, Washington, D. C., to Cmdr., AFSC, Andrews AFB, Md. . . . **M/G Jack K. Gamble**, from Cmdr., Alaskan Air Comd., Elmendorf AFB, Alaska, to Air Dep., Allied Forces Northern Europe, Kolsaas, Norway, replacing retiring M/G Kendall S. Young . . . **M/G William H. Ginn, Jr.**, from DCS/Plans, Hq. TAC, Langley AFB, Va., to Cmdr., TUSLOG, USAFE, Ankara, Turkey, replacing retiring M/G Frank W. Elliott, Jr. . . . **M/G (L/G selectee) James V. Hartinger**, from Cmdr., Air War College, and V/C, AU, Maxwell AFB, Ala., to Cmdr., Ninth AF, TAC, Shaw AFB, S. C., replacing L/G James D. Hughes.

M/G William R. Hayes, from Dir. of Maint. Engrg. & Supply, DCS/S&L, Hq. USAF, Washington, D. C., to Cmdr., Warner Robins ALC, AFLC, Robins AFB, Ga. . . . **L/G James E. Hill**, from CINC, Alaskan Comd., Elmendorf AFB, Alaska, to Cmdr., Alaskan Air Comd., Elmendorf AFB, Alaska, replacing M/G Jack K. Gamble . . . **L/G James D. Hughes**, from Cmdr., Ninth AF, TAC, Shaw AFB, S. C., to Cmdr., Twelfth AF, TAC, Bergstrom AFB, Tex., replacing retiring L/G Charles W. Carson, Jr. . . . **B/G Andrew P. Iosue**, from Dep. Dir., Pers. Programs, DCS/P, Hq. USAF, Washington, D. C., to Cmdr., USAF Recruiting Svc. and DCS/Recruiting, Hq. ATC, Randolph AFB, Tex., replacing M/G Bennie L. Davis.

M/G Larry M. Killpack, from V/C, Twelfth AF, TAC, Bergstrom AFB, Tex., to Cmdr., Keesler TTC, ATC, Keesler AFB, Miss., replacing M/G (L/G selectee) Bryan M. Shotts . . . **B/G Donald R. Klang**, from Asst. DCS/Mat. Mgmt., Hq. AFLC, Wright-Patterson AFB, Ohio, to Exec. Dir., Quality Assurance, Contract Admin. Svcs., DSA, Cameron Stn., Va. . . . **M/G Howard M. Lane**, from Cmdr., USAFTAWC, TAC, Eglin AFB, Fla., to Cmdr., ADTC, AFSC, Eglin AFB, Fla., replacing retiring M/G Henry B. Kucheman, Jr. . . . **M/G Oliver W. Lewis**, from Dir., Pers. Programs, DCS/P, Hq. USAF, Washington, D. C., to Dir., SAF Pers. Council, Washington, D. C. . . . **Col. (B/G selectee) Chris C. Mann**, from Cmdr., 3504th Recruiting Gp., ATC, Lackland AFB, Tex., to Dep. Dir., Human Resources, Directorate of Pers. Plans, DCS/P, Hq. USAF, Washington, D. C. . . . **L/G Winton W. Marshall**, from V/CINC, PACAF, Hickam AFB, Hawaii, to Dep. CINC, US Readiness Comd., MacDill AFB, Fla. . . . **B/G James E. McInerney, Jr.**, from Dep. Chief, JUSMMAT, Ankara, Turkey, to Dir. of Mil. Assist. & Sales, DCS/S&L, Hq. USAF, Washington, D. C., replacing retiring M/G Harold L. Price . . . **B/G Thomas H. McMullen**, from V/C, USAFTAWC,

TAC, Eglin AFB, Fla., to Cmdr., USAFTAWC, TAC, Eglin AFB, Fla., replacing M/G Howard M. Lane.

M/G Otis C. Moore, from Dir. of Ops., DCS/P&O, Hq. USAF, Washington, D. C., to Asst. DCS/P&O, Hq. USAF, Washington, D. C., replacing retiring M/G Foster L. Smith . . . **B/G Warren C. Moore**, from Cmdr., Off. Tng. School, ATC, and V/C, AF Mil. Tng. Cen., Lackland AFB, Tex., to Cmdr., Lowry TTC, ATC, Lowry AFB, Colo., replacing M/G Charles C. Pattillo . . . **B/G William R. Nelson**, from DCS/Log., Hq. TAC, Langley AFB, Va., to Dir. of Maint. Engrg. & Supply, DCS/S&L, Hq. USAF, Washington, D. C., replacing M/G William R. Hayes . . . **M/G Charles C. Pattillo**, from Cmdr., Lowry TTC, ATC, Lowry AFB, Colo., to V/C, ATC, Randolph AFB, Tex., replacing retiring M/G Robert W. Maloy . . . **B/G Don D. Pittman**, from IG, Hq. SAC, Offutt AFB, Neb., to Cmdr., 314th Air Div., PACAF, Osan AB, Korea, replacing retiring B/G Walter P. Paluch, Jr. . . . **M/G (L/G selectee) George Rhodes**, from Asst. DCS/S&L, Hq. USAF, Washington, D. C., to V/C, AFLC, Wright-Patterson AFB, Ohio . . . **L/G John W. Roberts**, from DCS/P, Hq. USAF, Washington, D. C., to Cmdr., ATC, Randolph AFB, Tex. . . . **B/G (M/G selectee) Malcolm E. Ryan, Jr.**, from C/S, Hq. TAC, Langley AFB, Va., to DCS/Plans, Hq. TAC, Langley AFB, Va., replacing M/G William H. Ginn, Jr. . . . **M/G (L/G selectee) Bryan M. Shotts**, from Cmdr., Keesler TTC, ATC, Keesler AFB, Miss., to Cmdr., Fifteenth AF, SAC, March AFB, Calif., replacing retiring L/G William F. Pitts.

Col. (B/G selectee) Leroy W. Svendsen, Jr., from Sp. Asst. to Cmdr., ATC, Craig AFB, Ala., to Defense Attaché, Cairo, Egypt . . . **M/G (L/G selectee) Kenneth L. Tallman**, from Dir., Pers. Plans, DCS/P, Hq. USAF, Washington, D. C., to DCS/P, Hq. USAF, Washington, D. C., replacing L/G John W. Roberts . . . **Col. (B/G selectee) Daryle E. Tripp**, from Dep. Dir. for Force Dev., DCS/P&O, Hq. USAF, Washington, D. C., to DCS/Tech. Tng., Hq. ATC, Randolph AFB, Tex., replacing M/G Charles G. Cleveland . . . **B/G Stanley M. Umstead, Jr.**, from Comdt., ACSC, AU, Maxwell AFB, Ala., to Comdt., AWC, AU, Maxwell AFB, Ala. . . . **B/G William R. Usher**, from Mil. Asst. to SAF, Washington, D. C., to Dep. Chief, JUSMMAT, Ankara, Turkey, replacing B/G James E. McInerney, Jr. . . . **Col. (B/G selectee) Robert F. C. Winger**, from Cmdr., 52d TFW, USAFE, Spangdahlem AB, Germany, to Comdt., ACSC, AU, Maxwell AFB, Ala., replacing B/G Stanley M. Umstead, Jr.

Cape Canaveral: 25 YEARS OF GLORY

BY CAPT. JOSEPH A. ANGELO, JR., USAF

On July 24, 1950, Bumper-8, a modified German V-2 rocket with a WAC Corporal second stage, roared off its primitive pad among the scrub palmettos of Florida's east coast. It was the first rocket to be launched successfully from Cape Canaveral Air Force Station.

In the intervening twenty-five years, Cape Canaveral has become the USAF's most famous piece of real estate, and the center of US space and missile test operations. Located fifteen miles north of Patrick AFB, the Cape is Station Number One of Air Force Systems Command's 10,000-mile-long Eastern Test Range, which extends south-eastward into the Indian Ocean.

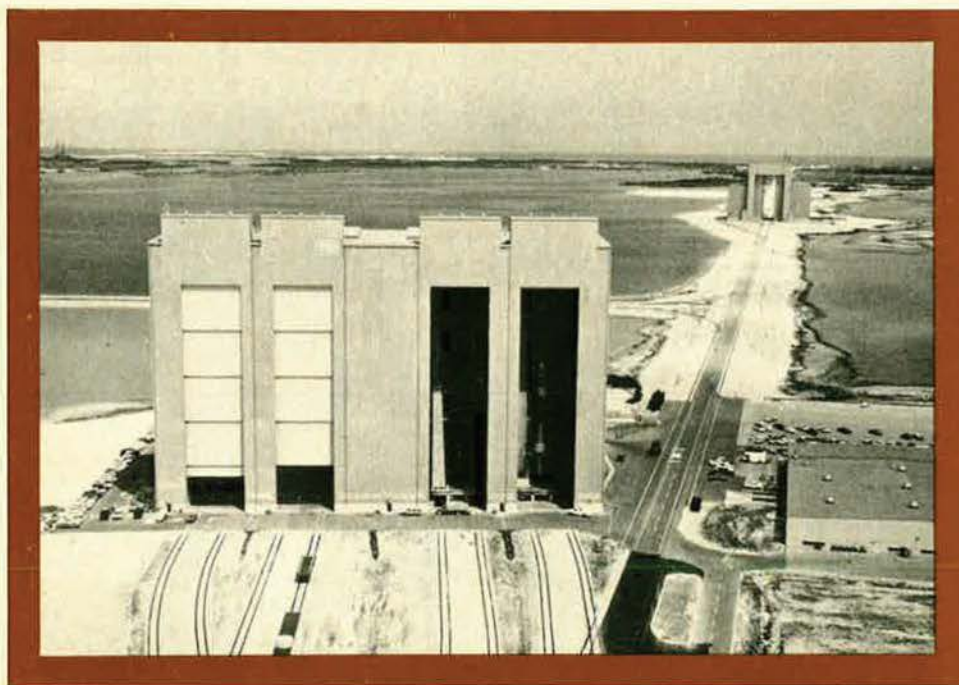
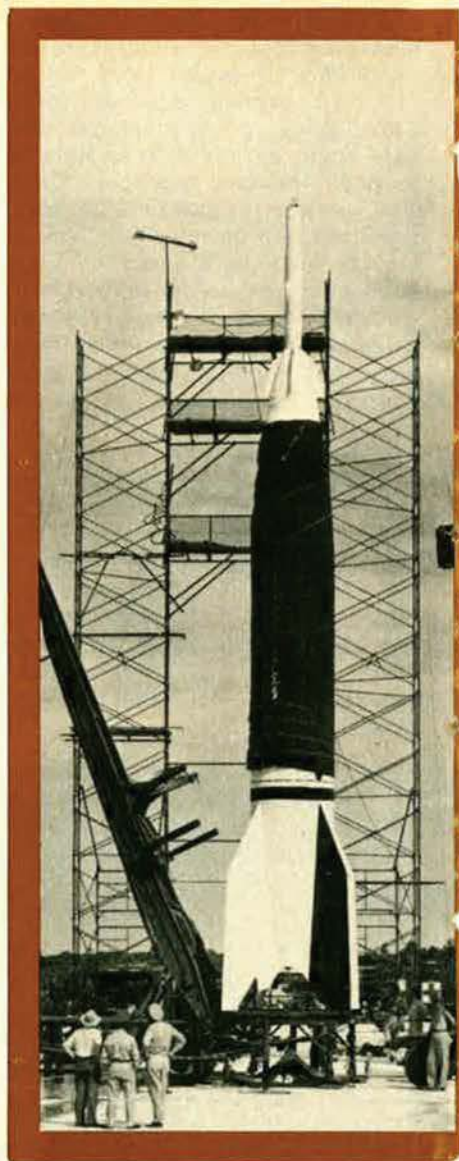
Today, the Cape's Titan III complex, a marvel of technical sophistication, stands in stark contrast to the "painter's scaffolding" that served as Bumper-8's gantry, and the old Army tank used for the launch control blockhouse.

The long record of events at Cape Canaveral provides a capsule history of the US conquest of space: Project Bumper; the "winged mis-

sile" tests of the 1950s; Thor, Jupiter, Atlas, Polaris, Titan, and Minuteman ballistic missile tests; Explorer I, the first US satellite placed into orbit; the launch of the first US astronauts to fly in space and to orbit the earth in Project Mercury; the Gemini manned space missions; and the first Apollo manned space launch are but a few of those historic achievements.

Much of the history of this country's advance into the space age has been preserved for the public in the Air Force Space Museum at Cape Canaveral. In addition to its fine indoor exhibits, the Museum grounds contain Complex 5/6 from which the first two US manned spaceflights were launched, and numerous outdoor displays of missiles and rockets that have flown from the Cape.

A few of the highlights of Cape Canaveral's first quarter century are shown here—triumphs and failures, too, that form the foundation of our search for peace in the space age and for a better understanding of our universe. ■

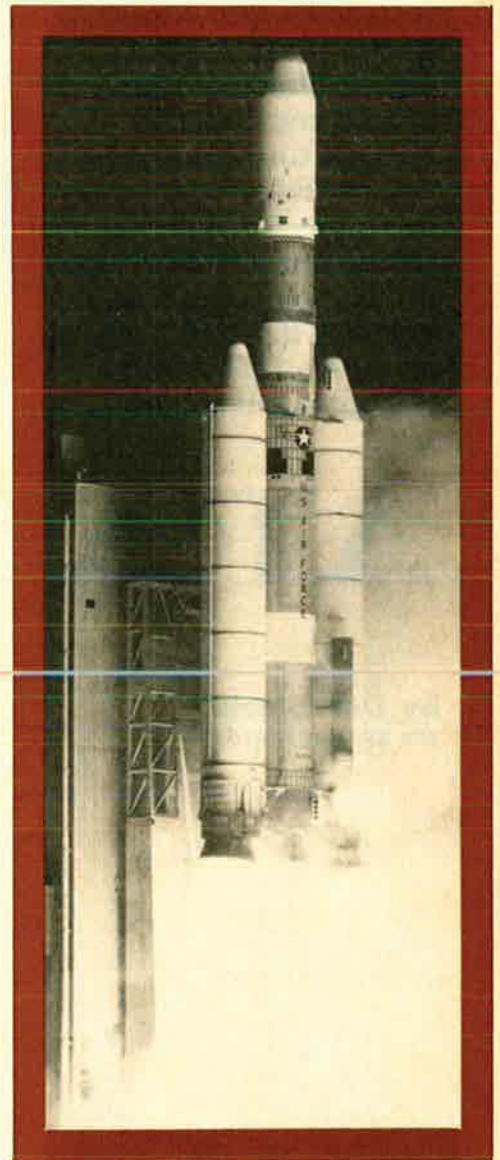


Above, on July 24, 1950, the unsophisticated Bumper-8 was the first rocket launched successfully from Cape Canaveral. In contrast to the primitive conditions of that era is the towering Titan III Vertical Integration Building (left), part of the Titan III complex where the giant launchers are assembled and delivered for launch in industrial assembly line fashion. The Titan III complex also includes a Solid Motor Assembly building, nineteen miles of railroad, and two technically advanced launch pads.

The author, Captain Angelo, is a Scientific Project Officer with the Space Division, AF Technical Applications Center, Patrick AFB, Fla. His Ph.D. studies in nuclear engineering were accomplished under AFIT at the University of Arizona.



During the early 1950s, a variety of winged missiles, including Matador, Goose, and Snark (left) were tested at the Cape. As space and missile launches took center stage in the late '50s and '60s, there were the inevitable "spectaculars" like the Juno II space vehicle (center) exploding seconds after launch. Experience of the '50s led to the reliable Titan III launcher (below), which provides greater mission flexibility than any other launch vehicle.



Far left, on February 20, 1962, John Glenn left the pad at Canaveral atop an Atlas booster to become the first American to orbit the earth. Left, Project Mercury Monument at the Cape honoring the seven original astronauts: Shepard, Grissom, Glenn, Carpenter, Schirra, Cooper, and Slayton.

George M. Douglas of Denver, Colo., has been nominated by acclamation to become AFA President for the next year, with current President Joe L. Shosid nominated to become Chairman of the Board. These names and nominees for other national offices and directorships will be presented next month to delegates attending AFA's 1975 Annual National Convention . . .

The AFA Nominating Committee met in Colorado Springs, Colo., on May 31, in conjunction with a meeting of the Air Force Association's Board of Directors. The Committee, which consists of AFA National officers, the members of the Board of Directors, and the President of each AFA State Organization or his designee, chose a slate of four National officers and eighteen Directors.

This slate will be presented to the delegates at AFA's 1975 Annual National Convention to be held in Washington, D. C., September 14-18.

George M. Douglas of Denver, Colo., was nominated by acclamation for the office of National President. Mr. Douglas is Assistant Vice President-Marketing at Mountain Bell. During World War II, he served with the Army in the Pacific Theater. Currently, he is an Air Force Reserve brigadier general with an assignment in NORAD. A Life Member of AFA, he now serves as an elected National Director; as a member of the Executive, Fi-

nance, Resolutions, and Membership Committees; and as a member of the Board of Trustees of the Aerospace Education Foundation, AFA's education affiliate. In the past, Mr. Douglas has served AFA as a State and Chapter President.

For Chairman of the Board, the Committee nominated **Joe L. Shosid** of Fort Worth, Tex. Mr. Shosid is President of Advertising Unlimited, Inc., a Fort Worth public relations and advertising agency, and serves as a football and basketball official in the Missouri Valley, Southwest, and Southeastern Athletic Conferences. Also, he is an assistant to Congressman Jim Wright of Texas. An enlisted veteran of World War II, Mr. Shosid currently is an Air Force Reserve officer with an assignment in the Air Force Office of Information. Now serving his second term as AFA's National President, Mr. Shosid also serves as Chairman of both the Total Force Advisory Council and the Convention Site Committee; as a member of the Executive, Finance, and Resolu-

AFA Nominees

By Don Steele
AFA AFFAIRS EDITOR



George M. Douglas



Joe L. Shosid

tions Committees; as an ex-officio member of all other AFA Committees and Councils; and as a member of the Board of Trustees of the Aerospace Education Foundation. He has served as Chairman of the Board of Directors, an elected National Director, a Regional Vice President, Chairman of the Executive Committee and of the Organizational Advisory Council; a member of the Air Reserve Council; and as a State and Chapter officer. Mr. Shosid is an AFA Life Member and, in 1963, he was named AFA's "Man of the Year."

Incumbent National Secretary **Martin H. Harris** of Winter Park, Fla., was nominated for reelection. Mr. Harris is a senior member of the Martin Marietta Corp.'s professional staff and an officer in the Air Force Reserve with an assignment at Hq. Air Force Systems Command. Now serving his third consecutive term as National Secretary, he also serves as Chairman of the Resolutions Committee, as a member of the Executive and Finance Committees, and as a member of the

Board of Trustees of the Aerospace Education Foundation. He has served as a member of the Organizational Advisory Council, as Regional Vice President, as an elected National Director, and as a State and Chapter President. In 1972, he was named AFA's "Man of the Year."

Incumbent National Treasurer, **Jack B. Gross** of Hershey, Pa., was nominated by acclamation for reelection. Mr. Gross, a colonel retired from the Air Force Reserve, is a prominent civic leader and businessman. He is now serving his thirteenth term as National Treasurer, and also serves as Chairman of AFA's Finance Committee, as a member of the Executive, Resolutions, and Convention Site Committees, and as a member of the Aerospace Education Foundation's Board of Trustees. He has served as Chairman of the Board, an elected National Director, and as a State and Chapter President. In 1958, he was named AFA's "Man of the Year," and in 1964 he received AFA's Gold Life Member Card No. 5.

The following are permanent members of the AFA Board of Directors under the provisions of Article IX of AFA's National Constitution:

John R. **Alison**, Joseph E. **Assaf**, William R. **Berkeley**, Edward P. **Curtis**, James H. **Doolittle**, Joe **Foss**, Jack B. **Gross**, George D. **Hardy**, John P. **Henebry**, Joseph L. **Hodges**, Robert S. **Johnson**, Arthur F. **Kelly**, George C. **Kenney**, Thomas G. **Lanphier, Jr.**, Jess **Larson**, Curtis E. **LeMay**, Carl J. **Long**, Howard T. **Markey**, John P. **McConnell**, J. B. **Montgomery**, Martin M. **Ostrow**, Julian B. **Rosenthal**, John D. **Ryan**, Peter J. **Schenk**, Joe L. **Shosid**, C. R. **Smith**, William W. **Spruance**, Thos. F. **Stack**, Arthur C. **Storz**, Harold C. **Stuart**, James M. **Trail**, Nathan F. **Twining**.

The eighteen men whose pictures appear on the following page are nominees for the eighteen elective Directorships on the AFA Board of Directors for the coming year. (Names marked with an asterisk are incumbent National Directors.)

for 1975-76



Martin H. Harris



Jack B. Gross



Brosky



D. Callahan



D. F. Callahan



Clark



Fisher



Grazioso



Harris



Hasler



Higgins



Keith



Lawson



Mazer



Nedder



Nettleton



Price



Stearn



Stewart



West

Nominees for AFA's Board of Directors

* **John G. Brosky**, Pittsburgh, Pa.—judge. Former Chapter, State President; National Convention Parliamentarian; National Council member. Current National Committee member; Aerospace Education Foundation Board of Trustees member. AFA Presidential Citation 1970 and 1974. Life Member.

* **Dan Callahan**, Warner Robins, Ga.—physician. Former Chapter President. Current State President; National Committee member; Aerospace Education Foundation Board of Trustees member. AFA Presidential Citation 1973. Life Member.

* **Daniel F. Callahan**, Nashville, Tenn.—management engineering consultant. Former Chapter, State President; National Council Chairman. Current National Committee member. Life Member.

Earl D. Clark, Jr., Kansas City, Kan.—construction company executive. Former Chapter officer; State President. Current Vice President (Mid-

west Region); National Committee member.

* **Herbert O. Fisher**, Kinnelon, N. J.—retired metropolitan area aviation official. Former Chapter President. Current Aerospace Education Foundation Board of Trustees member.

James P. Grazioso, West New York, N. J.—roofing and sheet metal contractor. Former Chapter officer; State President; Vice President (Northeast Region). Current Chapter President.

* **Alexander E. Harris**, Little Rock, Ark.—property management executive. Former Chapter, State President; Vice President (South Central Region). Current National Council member.

* **Gerald V. Hasler**, Endwell, N. Y.—architectural design and remodeling corporation executive. Current Chapter, State President; National Committee member; Aerospace Education Foundation Treasurer. AFA Presidential Citation 1974; AFA Citation of Honor 1973.

* **Joe Higgins**, North Hollywood, Calif.—TV and motion picture personality. Former Chapter President. Master of Ceremonies and principal speaker at many AFA and USAF functions around the nation (including AFA's Outstanding Airmen Dinner and its dinner honoring the Outstanding Squadron at the Air Force Academy). Current National Committee member. AFA Presidential Citation 1970; AFA "Man of the Year" 1973. Life Member.

* **Sam E. Keith, Jr.**, Fort Worth, Tex.—traffic and maintenance engineering manager. Former Chapter, State President; National Council member; Vice President (Southwest Region). Current National Committee member; Aerospace Education Foundation Board of Trustees member. AFA "Man of the Year" 1967. Life member.

* **Robert S. Lawson**, Los Angeles, Calif.—textile industry executive. Former Chapter, State President; Vice President (Far West Region); National Committee Chairman. Current Aerospace Education Foundation Board of Trustees member. Life Member.

* **Nathan H. Mazer**, Roy, Utah—Industrial Development Bureau director. Former Vice President (Rocky Mountain Region); National Council Chairman; National Adviser (Retiree); National Secretary. Current National Committee member; Aerospace Education Foundation Board of Trustees member. AFA Presidential Citation 1969. Life Member.

* **Edward T. Nedder**, Hyde Park, Mass.—attorney. Former Vice President (New England Region). Current National Council member.

* **J. Gilbert Nettleton, Jr.**, New York, N. Y.—aerospace industry executive. Former Squadron Commander; Chapter President; Chairman of National Air Force Salute; Chairman of the Board of Trustees, Aerospace Education Foundation. Current National Committee member; Aerospace Education Foundation Board of Trustees member. AFA Presidential Citation 1966 and 1974. Life Member.

* **Jack C. Price**, Clearfield, Utah—Air Force civilian executive. Former Chapter, State President; Vice President (Rocky Mountain Region); National Council member. Current National Council Chairman. Life Member.

* **Edward A. Stearn**, Sar Bernardino, Calif.—aerospace industry executive. Former Chapter President; State officer. Current National Committee member. AFA Presidential Citation 1972.

* **Hugh W. Stewart**, Tucson, Ariz.—attorney. Former Chapter, State President; National Committee Chairman. Current National Committee member; Aerospace Education Foundation Board of Trustees member.

* **A. A. West**, Newport News, Va.—aerospace industry executive. Former Chapter, State President; Vice President (Central East Region); National Council Chairman. Current National Committee member. AFA Presidential Citation 1972 and 1973.

* Names marked with an asterisk are incumbents.

INDUSTRIAL ASSOCIATES OF THE AIR FORCE ASSOCIATION

Listed below are the Industrial Associates of the Air Force Association. Through this affiliation, these companies have tangibly indicated their readiness to participate as "Partners in Aerospace Power," in the interest of national security.

AIL, Div. of Cutler-Hammer
AMF, Inc.
Aerojet Electrosystems Co.
Aerojet-General Corp.
Aeronca, Inc.
Aeronutronic Ford Corp.
Aerospace Corp.
Allegheny Ludlum Industries, Inc.
American Telephone & Telegraph Co.
AT&T Long Lines Department
Applied Technology, Div. of Itek Corp.
Avco Corp.
BDM Corp., The
Battelle Memorial Institute
Beech Aircraft Corp.
Bell Aerospace Co.
Bell Helicopter Co.
Bell & Howell Co.
Bendix Corp.
Benham-Blair & Affiliates, Inc.
Boeing Co.
Brush Wellman, Inc.
Burrhoughs Corp.
CAI, Div. of Bourns, Inc.
Canadian Marconi Co.
Carborundum Co.
Ceresco Industries, Inc.
Cessna Aircraft Co.
Chromalloy American Corp.
Collins Radio Group, Rockwell Int'l
Colt Industries, Inc.
Computer Sciences Corp.
Conrac Corp.
Control Data Corp.
Day & Zimmermann, Inc.
Dayton T. Brown, Inc.
Decca Navigation Systems, Inc.
De Havilland Aircraft of Canada Ltd.
Dynalectron Corp.
E. I. Du Pont de Nemours & Co.
E-Systems, Inc.
Eastman Kodak Co.
Electronic Communications, Inc.
Emerson Electric Co.
Engine & Equipment Products Co.
Fairchild Industries, Inc.
Federal Electric Corp., ITT
Firestone Tire & Rubber Co.
GAF Corp.
GTE Sylvania, Inc.
Garrett Corp.

General Dynamics Corp.
General Dynamics, Electronics Div.
General Dynamics, Fort Worth Div.
General Electric Co.
GE Aircraft Engineering Business Group
General Motors Corp.
GMC, Allison Div.
GMC, Delco Electronics Div.
GMC, Harrison Radiator Div.
GMC, Packard Electric Div.
General Research Corp.
General Time Corp.
Goodyear Aerospace Corp.
Goodyear Tire & Rubber Co.
Grimes Manufacturing Co.
Grumman Corp.
Harris Corp.
Hayes International Corp.
Hazeltine Corp.
Hermes Electronics Ltd.
Hi-Shear Corp.
Hoffman Electronics Corp.
Honeywell, Inc.
Howell Instruments, Inc.
Hudson Tool & Die Co., Inc.
Hughes Aircraft Co.
Hughes Helicopters
Hydro-Aire Div., Crane Co.
IBM Corp.
ITT Aerospace, Electronics,
Components & Energy Group
ITT Defense Communications Group
International Harvester Co.
Interstate Electronics Corp.
Kaman Corp.
Kelsey-Hayes Co.
LTV Aerospace Corp.
Lear Siegler, Inc.
Leigh Instruments Ltd.
Libbey-Owens-Ford Co.
Litton Industries, Inc.
Litton Industries
Guidance & Control Systems Div.
Lockheed Aircraft Corp.
Lockheed Aircraft Service Co.
Lockheed California Co.
Lockheed Electronics Co.
Lockheed Georgia Co.
Lockheed Missiles & Space Co.
Logicon, Inc.
Magnavox Co.
Marcus & Gordon, Inc.
Martin Marietta Aerospace Co.
Martin Marietta, Denver Div.
Martin Marietta, Orlando Div.

McDonnell Douglas Corp.
MITRE Corp.
Moog, Inc.
Motorola, Inc.
Northrop Corp.
OEA, Inc.
O. Miller Associates
Overseas National Airways, Inc.
Pacific Corp.
Page Communications Engineers, Inc.
Pan American World Airways, Inc.
Products Research & Chemical Corp.
RCA
Rand Corp.
Raytheon Co.
Redifon Flight Simulation Ltd.
Rockwell International
Rockwell Int'l, Autonetics Div.
Rockwell Int'l, Los Angeles Div.
Sanders Associates, Inc.
Singer Co.
Space Corp.
Sperry Rand Corp.
Sverdrup & Parcel & Associates, Inc.
System Development Corp.
TRW Systems, Inc.
Teledyne, Inc.
Teledyne, CAE Div.
Teledyne Ryan, Aeronautical Div.
Texas Instruments, Inc.
Thiokol Corp.
Tracor, Inc.
Union Carbide Corp.
United Technologies Corp.
UTC, Chemical Systems Div.
UTC, Hamilton Standard Div.
UTC, Norden Div.
UTC, Pratt & Whitney Aircraft Div.
UTC, Research Center
UTC, Sikorsky Aircraft Div.
Vapor Corp.
Western Air Lines, Inc.
Western Gear Corp.
Western Union Telegraph Co.
Government Systems Div.
Westinghouse Electric Corp.
Westinghouse Electronic Systems
Support Div.
World Airways, Inc.
Wyman-Gordon Co.
Xonics, Inc.



LIFE INSURANCE YOU CAN DEPEND ON

AFA's Double Protector for Military Personnel with Optional Family Coverage Available

THE STANDARD PLAN (\$66,000 Maximum)

Insured's Age	Coverage	Extra Accidental Death Benefit*	Monthly Cost Individual Plan	Optional Family Coverage Spouse	Each Child**	Monthly Cost Family Coverage
20-24	\$66,000	\$12,500	\$10.00	\$6,000	\$2,000	\$2.50
25-29	60,000	12,500	10.00	6,000	2,000	2.50
30-34	50,000	12,500	10.00	6,000	2,000	2.50
35-39	40,000	12,500	10.00	6,000	2,000	2.50
40-44	25,000	12,500	10.00	5,250	2,000	2.50
45-49	15,000	12,500	10.00	4,050	2,000	2.50
50-59	10,000	12,500	10.00	3,000	2,000	2.50
60-64	7,500	12,500	10.00	2,250	2,000	2.50
65-69	4,000	12,500	10.00	1,200	2,000	2.50
70-75	2,500	12,500	10.00	750	2,000	2.50

THE HIGH OPTION PLAN (\$100,000 Maximum)

Insured's Age	Coverage	Extra Accidental Death Benefit*	Monthly Cost Individual Plan	Optional Family Coverage Spouse	Each Child**	Monthly Cost Family Coverage
20-24	\$100,000	\$12,500	\$15.00	\$6,000	\$2,000	\$2.50
25-29	90,000	12,500	15.00	6,000	2,000	2.50
30-34	75,000	12,500	15.00	6,000	2,000	2.50
35-39	60,000	12,500	15.00	6,000	2,000	2.50
40-44	37,500	12,500	15.00	5,250	2,000	2.50
45-49	22,500	12,500	15.00	4,050	2,000	2.50
50-59	15,000	12,500	15.00	3,000	2,000	2.50
60-64	11,250	12,500	15.00	2,250	2,000	2.50
65-69	6,000	12,500	15.00	1,200	2,000	2.50
70-75	3,750	12,500	15.00	750	2,000	2.50

* A 15% dividend was declared for all 1974 participants, even further reducing net monthly cost of insurance!

*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 your plan's regular coverage benefit, except as noted under AVIATION DEATH BENEFIT, below.

**Each child has \$2,000 of coverage 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 \$15,000 under the Standard Plan or \$22,500 under the High-Option 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.

AFA's DOUBLE PROTECTOR is a double opportunity for you to get the life insurance coverage you want and need. AFA's Standard Plan is adequate for most families. But if you have a need for greater protection, you should select the High Option Plan.

FAMILY PLAN AVAILABLE. Protect your whole family (no matter how many) for only \$2.50 per month. Insure newborn children as they become eligible just by notifying AFA. No additional cost.

COMPARE THE ADVANTAGES OF THESE AFA PROGRAMS FOR MILITARY PERSONNEL

Wide Eligibility. All active duty, Ready Reserve and National Guard personnel under age 60, plus Academy and college or university ROTC cadets are eligible for this coverage. (Because of certain limitations on group insurance coverage, Reserve and Guard personnel who reside in Ohio, Texas, Florida and New Jersey should request information from AFA headquarters on a separate policy providing similar benefits.)

No War Clause, hazardous duty restriction or geographical limitation.

* **Reduction of Cost by Dividends.** While the payment of future dividends cannot be guaranteed, the net cost of this coverage has been reduced by dividends in 10 of the last 13 years.

Keep Your Coverage after Leaving Active Duty. Both the premium amount and schedule of benefits will remain the same.

Disability Waiver of Premium Benefits, if you become totally disabled for at least nine months, prior to age 60.

Full Choice of Settlement Options, including individualized arrangements for special situations.

Guaranteed Conversion Privilege. Coverage under the group program may be converted to any permanent plan of insurance offered by the Underwriter, regardless of your health, upon attainment of age 75 or termination of AFA membership.

Convenient Premium Payment Plans. Premium payments may be made by monthly government allotment, or direct to AFA in quarterly, semi-annual or annual installments.

EFFECTIVE DATE OF YOUR COVERAGE. All certificates are dated and take effect on the last day of the month in which your application for coverage is approved. Coverage runs concurrently with AFA membership. AFA Military Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustee of the Air Force Association Group Insurance Trust.

EXCEPTIONS. There are a few logical exceptions to this coverage. They are:

Group Life Insurance: Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane shall not be effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

CHOOSE EITHER OF THESE STRONG, DEPENDABLE PLANS! MAIL THIS APPLICATION TO AFA TODAY!

TO HELP THE PEOPLE WHO DEPEND ON YOU!



APPLICATION FOR AFA MILITARY GROUP LIFE INSURANCE



Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office: Omaha, Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

Date of birth _____
Mo. Day Yr.
Height Weight Social Security Number

Name and relationship of primary beneficiary

Please indicate category of eligibility and branch of service.

- Extended Active Duty
 Ready Reserve or National Guard
 Air Force Academy _____ Academy
 ROTC Cadet _____
Name of college or university
- Air Force
 Other _____
(Branch of service)

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.

Please indicate below the Mode of Payment and the Plan you elect.

HIGH OPTION PLAN

STANDARD PLAN

Members Only	Members and Dependents	Mode of Payment	Members Only	Members and Dependents
<input type="checkbox"/> \$ 15.00	<input type="checkbox"/> \$ 17.50	Monthly government allotment. I enclose 2 months' premium to cover the period necessary for my allotment to be established.	<input type="checkbox"/> \$ 10.00	<input type="checkbox"/> \$ 12.50
<input type="checkbox"/> \$ 45.00	<input type="checkbox"/> \$ 52.50		<input type="checkbox"/> \$ 30.00	<input type="checkbox"/> \$ 37.50
<input type="checkbox"/> \$ 90.00	<input type="checkbox"/> \$105.00	Quarterly. I enclose amount checked.	<input type="checkbox"/> \$ 60.00	<input type="checkbox"/> \$ 75.00
<input type="checkbox"/> \$180.00	<input type="checkbox"/> \$210.00	Semiannually. I enclose amount checked.	<input type="checkbox"/> \$120.00	<input type="checkbox"/> \$150.00
		Annually. I enclose amount checked.		

Names of Dependents To Be Insured*	Relationship to Member	Dates of Birth Mo. Day Yr.	Height	Weight

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes No

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, asylum or similar institution in the past 5 years? Yes No

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes No

IF YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National Bank 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 the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid. I understand United reserves the right to request additional evidence of insurability in the form of a medical statement by any attending physician or an examination by a physician selected by United.

Date _____, 19 _____ Member's Signature _____

8/75

Form 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

By Don Steele
AFA AFFAIRS EDITOR

THE AK-SAR-BEN CHAPTER, NEBRASKA
cited for consistently effective programming in support of the mission of AFA, most recently exemplified in its Arthur C. Storz, Sr., Awards Luncheon.



More than 500 leaders of the Air Force, the Omaha community, and AFA attended the Ak-Sar-Ben Chapter's Annual Arthur C. Storz, Sr., Awards Luncheon held recently at the Holiday Inn in Omaha, Neb. Tennessee Ernie Ford, TV personality, singer, and a frequent participant in national AFA functions, was the special guest and speaker. Mr. J. D. Anderson, President, Guarantee Mutual Life Co., was the master of ceremonies, and Gen. Russell E. Dougherty, Commander in Chief, Strategic Air Command, introduced the guest speaker. The event served also as a reunion for General Dougherty, Mr. Ford, and CMSgt. Fred H. Quinn, now with SAC's 28th Air Refueling Squadron at Ellsworth AFB, S. D. The three gentlemen served together in WW II as pilot, bombardier, and tail gunner on a B-29. Special guests included Dr. Charles W. Cook, Deputy Under Secretary of the Air Force (Space Systems); Lt. Gen. James Keck, Vice Commander in Chief, SAC; Maj. Gen. Andrew B. Anderson, Jr., Chief of Staff, SAC; Earl D. Clark, Jr., Vice President for AFA's Midwest Region; and Lyle Remde, Nebraska State AFA President. In recognition of the Chapter's continued outstanding support of the mission of AFA, most recently exemplified in its Arthur C. Storz, Sr., Awards Luncheon, AFA President Shosid named the Ak-Sar-Ben Chapter as AFA's "Unit of the Month" for August. In the photo above left, Chapter President Robert E. Runice, right, presents Capt. David R. Tillman, an analyst with SAC's Command Center Processing and Display System, the Chapter's Arthur C. Storz, Sr., Award as its Outstanding Junior Officer. In the foreground is SAC Commander in Chief Gen. Russell E. Dougherty (USAF photo). The Chapter's Outstanding Airman Award was presented to Airman Stuart H. Rothberg, of the Ehrling Bergquist USAF Regional Hospital. In the photo above, AFA President Joe L. Shosid, right, presents Arthur C. Storz, Sr., seated, a WW I airman, founder of the Ak-Sar-Ben Chapter, and a permanent AFA National Director, a Jimmy Doolittle Fellow Award designating him a Jimmy Doolittle Fellow of the Aerospace Education Foundation, AFA's education affiliate (USAF photo).

In the photo at lower left, President Shosid presents Tennessee Ernie Ford AFA's Citation of Honor for his outstanding services to and support of the Air Force Association as a master of ceremonies at two AFA Honors Night Programs, and at one of its dinners honoring the Outstanding Squadron at the Air Force Academy (USAF photo).



The newly organized Kentucky Chapter of Louisville recently held its Charter Night Dinner in the Breckenridge Inn. Don Steele, AFA's Assistant Executive Director/Field Operations, was the guest speaker and presented the Chapter its AFA charter on behalf of AFA President Joe L. Shosid. Shown are, from left, Gale Hearn and James Lovett, members of the Chapter's Executive Council; Robert G. Allen, Treasurer; John B. Conaway, President; Brig. Gen. Lawrence A. Quebbman, Assistant Adjutant General for Air, Kentucky National Guard; Don Steele; Joel L. Stokes, Jr., Secretary; Melvin Richardson, Vice President; and Robert H. Williams, Executive Council member.



Gen. William V. McBride, Commander, Air Force Logistics Command, Wright-Patterson AFB, Ohio, was the guest speaker at the Olmsted Chapter's Armed Forces Day Luncheon in Mechanicsburg, Pa. Shown in the photo are, from left, Chapter President Donald V. Snyder, a lieutenant colonel in the Pennsylvania Air National Guard; AFA National Treasurer Jack B. Gross; General McBride; Pennsylvania State AFA President Deane Sterrett; and Brig. Gen. Richard B. Posey, State Deputy Adjutant General for Air. General McBride is wearing the state's Distinguished Service Medal, which was presented to him at the luncheon. (US Navy photo by Lee W. Godshall)



The Denver, Colo., Air Force community, spearheaded by AFA's Front Range Chapter, and the State of Colorado recently commemorated the history of aviation by recognizing April as "Air Force Heritage Month." Officially proclaimed by Colorado Governor Richard Lamm, Air Force Heritage Month formally opened with an exhibit of rare and unusual aviation artifacts at Colorado Women's College in Denver, then to other locations in Denver, Greeley, Fort Collins, and Colorado Springs. Among the many dignitaries who visited the exhibits were Rep. Patricia Schroeder (D-Colo.) and her husband, James. In the photo, they are shown admiring "Watch on the Rhine" by Robert Geissman, one of the pictures from the Air Force Art Collection that was exhibited during Air Force Heritage Month.



AFA National President Joe L. Shosid, right, the guest speaker at the Utah State AFA's 20th Annual Convention Banquet, presents Ute Chapter Vice President James Taylor, left, and Rocky Mountain Chapter President Grace Kyle, center, their awards as the Utah State AFA's "Man of the Year" and "Woman of the Year" for 1974-75. During the convention business session, Robert D. Walker was elected to succeed Gil F. Friederichs as the State AFA President for the coming year. Others elected are: Robert Farrell, Donald W. Aunspaugh, and Robert H. Foster, Vice Presidents; James H. Della Silva, Treasurer; Mrs. Donald Edvalson, Secretary; and Les E. Richardson, Judge Advocate.



More than 300 senior and junior officers, enlisted personnel, civic dignitaries, and AFA members attended the recent Commander's Dining-In at Hill AFB, which was cohosted by Maj. Gen. Edmund A. Ratalko, Ogden Air Logistics Center Commander, and the Utah State AFA. Gen. David C. Jones, USAF Chief of Staff, was the guest speaker. During the program, Utah State AFA President Gil F. Friederichs, center, presented General Jones a portrait of the Air Force Chief. General Ratalko is seated at right.

COMING EVENTS IN AFA

Louisiana State AFA Convention, Captain Shreve Hotel, Shreveport, August 22-23 . . . AFA National Convention and Aerospace Development Briefings and Displays, Sheraton-Park Hotel, Washington, D. C., September 14-18.



AFJROTC Cadet SSgt. Larry Smith, left, of Berkeley High School, Moncks Corner, S. C., received the Charleston Chapter's Walter H. Andrews Achievement Award from Brig. Gen. Tedd L. Bishop, Commander, 437th Military Airlift Wing, Charleston AFB. Cadet Smith's essay, "My Responsibility as an American Citizen," was judged the winner in the Chapter's annual essay contest and, as a result, he was awarded an expense-paid trip to Washington, D. C., where he visited Sen. Strom Thurmond (R-S. C.) and the AFA National Headquarters Offices, and toured points of national historic interest in the D. C. area. (USAF photo)



During recent ceremonies at the Confederate Hills Country Club in Richmond, Virginia Governor Mills E. Godwin, Jr., was named a charter Jimmy Doolittle Fellow of the Aerospace Education Foundation, AFA's education affiliate. In the photo, Governor Godwin, left, is being congratulated by Virginia State AFA President Lester J. Rose, right, after having received the award from George D. Hardy, center, Chairman of the Foundation's Board of Trustees. The award was sponsored by the Chapters of the Virginia State AFA in recognition of the Governor's outstanding support of higher education throughout the Old Dominion. It represents a \$1,000 contribution to the Foundation by the sponsors and is named in honor of Lt. Gen. James H. Doolittle, USAF (Ret.), aviation pioneer, famed WW II Air Force commander, and AFA's first National President.



During the Illinois State AFA's 1975 Convention in Chicago, Chicagoland Chapter Vice President Roger Henn, left, presents Chicago Mayor Richard J. Daley's "AFA Membership Week" proclamation to Illinois State AFA President Chuck Oelrich.



CAP Cadet Lt. Col. Robert R. Darcey, left, the Outstanding Cadet of the Herndon Composite Squadron, Virginia Wing, Civil Air Patrol, was the recipient of the Northern Virginia Chapter's \$100 Flying Scholarship. Chapter President Thomas "Tony" Anthony, center, made the presentation during a recent dinner meeting sponsored by the Chapter. At right is CAP Capt. Dorothy Fuller, of the Herndon CAP Squadron.

George Skurla, center, Grumman Aerospace President, the recipient of the H. H. Arnold Chapter's "Man of the Year" award, shows the award to Rep. Lester L. Wolff (D-N.Y.), left, a member of the Chapter's Executive Council and recipient of the award in 1970, and Frank Battersby, right, Chairman of the Chapter's Executive Council. The presentation, which was made during the Chapter's annual Awards Dinner, was in recognition of his continuing efforts in furthering the progress of aerospace. More than 300 aerospace leaders, members, and distinguished guests attended the dinner at the Westbury Manor in Westbury, N. Y.



CHAPTER AND STATE PHOTO GALLERY



Miss USA, Summer Bartholomew, of Merced, Calif., holds a drawing done for her by Milton Caniff (see p. 22 in the July issue), a former AFA National Director, and creator of the syndicated comic strip "Steve Canyon." The drawing was presented by Dwight Ewing, left, President of AFA's Merced Chapter, and Col. Jimmy R. Williams, 93d Bomb Wing Commander, Castle AFB, at a luncheon given in her honor. Summer, who was named for Summer Olson Canyon, a character in the comic strip, was Miss Merced Chapter in 1974 and was the runnerup in the 1974 "Miss California AFA" contest, which was won by Airman Wendy Whitfield, an inventory management specialist with the 6505th Supply Squadron at Edwards AFB. (USAF photo by A1C Steve Holmes)



Congressman B. F. Sisk (D-Calif.), and Gen. David C. Jones, USAF Chief of Staff, shared the podium as guest speakers at the Merced Chapter's recent Honors Night Dinner. During the program, General Jones, right, presented the California State AFA's "Military Unit of the Year" award to Lt. Col. James Aycock, Commander, 84th Fighter Interceptor Squadron (ADC), Castle AFB. Held in the Merced County Fairgrounds Pavilion, the event drew more than 600 AFA members and their guests, and other leaders of the community. AFA National Director Jack Withers was the master of ceremonies, and California State AFA President John Lee installed the Chapter's newly elected officers.



In an effort to establish a more effective AFA chapter in Chicago, the Chicago Southwest and Ken Fogle Loop Chapters recently merged to form the Chicagoland Chapter. In conjunction with the 1975 Illinois State AFA Convention in Chicago, the Chapter held its first membership meeting and elected the following officers to head the Chapter for the coming year: from left, Roger Henn, Vice President (Operations); Richard H. Becker, Treasurer; Alexander Field, Jr., President; P. Kevin Clary, Secretary; and Robert Duguid, Vice President (Membership).



During the past several months, the ceremony pictured above has taken place during field days and dinners all over the country. To represent all of these occasions, we have chosen the photo above showing George G. Lambkin, left, presenting AFJROTC Cadet Maj. Jerry Garez AFA's AFJROTC Bronze Medal in recognition of his outstanding scholastic and military achievements. Mr. Lambkin represented AFA's Alamo Chapter of San Antonio, Tex., and Cadet Garez is a member of the AFJROTC unit at San Antonio's Holy Cross High School.



An AFROTC Career Day was held recently at Scott AFB, Ill., under the sponsorship of the Base Junior Officers' Council. AFROTC cadets from St. Louis University (SLU), Southern Illinois University at Carbondale and Edwardsville, Southeast Missouri State University, and Washington University in St. Louis, participated. Hugh L. Enyart, Scott Memorial Chapter President, made an AFA presentation to the group. Shown with Mr. Enyart are, front row, from left, Cadet Lt. Col. John O'Connor, SLU; Col. Charles C. Irions, 375th Aeromedical Airlift Wing Commander; Cadet Maj. James Vogelgesang, SLU; and rear row, from left, Lt. Dave Taylor, JOC Project Officer; Mr. Enyart; Lt. Robert Behler, Scott JOC President; and Lt. Pat Lynch, JOC Project Officer. (USAF photo)

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): James B. Tipton, 3032 Hill Hedge Dr., Montgomery, Ala. 36111 (phone 263-6944).

ALASKA (Anchorage, Fairbanks, Kenai): Vernon R. Johnson, c/o Peat, Marwick, Mitchell & Co., 736 G St., Anchorage, Alaska 99501 (phone 272-7401).

ARIZONA (Phoenix, Tucson): Robert E. Poston, 4818 E. Scarlett, Tucson, Ariz. 85711.

ARKANSAS (Blytheville, Fort Smith, Little Rock): Robert M. Tirman, 1801 Hill Rd., Jacksonville, Ark. 72076 (phone 372-8361, ext. 383).

CALIFORNIA (Apple Valley, Edwards, Fairfield, Fresno, Hawthorne, Hermosa Beach, Long Beach, Los Angeles, Marysville, 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): Liston T. Taylor, 4173 Oakwood Road, Lompoc, Calif. 93436 (phone 733-2723).

COLORADO (Aurora, Boulder, Colorado Springs, Denver, Ft. Collins, Greeley, Littleton, Pueblo): James C. Hall, P. O. Box 30185, Lowry AFB Station, Denver, Colo. 80230 (phone 366-5363, ext. 459).

CONNECTICUT (East Hartford, Stratford, Torrington): Margaret E. McEnerney, 1476 Broadbridge Ave., Stratford, Conn. 06497 (phone 377-3517).

DELAWARE (Dover, Wilmington): George H. Chabbott, 33 Mikell Dr., Dover, Del. 19901 (phone 421-2341).

DISTRICT OF COLUMBIA (Washington, D. C.): George G. Troutman, 1025 Connecticut Ave., N. W., Washington, D. C. 20036 (phone 785-6500).

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): Jack Rose, 5723 Imperial Key, Tampa, Fla. 33615 (phone 855-4046).

GEORGIA (Athens, Atlanta, Rome, Savannah, St. Simons Island, Valdosta, Warner Robins):

Dan Callahan, 134 Hospital Dr., Warner Robins, Ga. 31093 (phone 923-4288).

HAWAII (Honolulu): Larry Ronson, 21 Craigsides Pl., Apt. 7A, Honolulu, Hawaii 96817 (phone 525-6160).

IDAHO (Boise, Burley, Pocatello, Twin Falls): Larry L. Leach, 6318 Bermuda Dr., Boise, Idaho 83705 (phone 344-1671).

ILLINOIS (Belleville, Champaign, Chicago, Elmhurst, O'Hare Field): Charles Oelrich, 711 East D St., Belleville, Ill. 62221 (phone 233-2430).

INDIANA (Indianapolis, Lafayette, Logansport): William H. Pfarrer, 604 Green Hills Dr., Logansport, Ind. 46947.

IOWA (Des Moines): Ric Jorgensen, P. O. Box 4, Des Moines, Iowa 50301 (phone 255-7656).

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LOUISIANA (Alexandria, Baton Rouge, Bossier City, Monroe, New Orleans, Ruston, Shreveport): Louis Kaposta, 6255 Carlson, New Orleans, La. 70122 (phone 581-3663).

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 AFB, Taunton, Worcester): Arthur D. Marcotti, 215 Laurel St., Melrose, Mass. 02176 (phone 665-5057).

MICHIGAN (Detroit, Kalamazoo, Lansing, Marquette, Mount Clemens, Oscoda, Sault Ste. Marie): Richard Mossoney, 17356 Eddon, Melvindale, Mich. 48122 (phone 928-3482).

MINNESOTA (Duluth, Minneapolis, St. Paul): Daniel W. Priedeaux, 4620 W. 77th St., Minneapolis, Minn. 55435 (phone 922-2922).

MISSISSIPPI (Biloxi, Columbus, Jackson): Billy A. McLeod, P. O. Box 1274, Columbus, Miss. 39701 (phone 328-0943).

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): Cesar J. Martinez, 4214 Grace St., Las Vegas, Nev. 89121 (phone 451-3037).

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): Joseph J. Bendetto, 2164 Kennedy Blvd., Jersey City, N. J. 07305 (phone 420-6154).

NEW MEXICO (Alamogordo, Albuquerque, Clovis): Harry L. Gogan, 2913 Charleston, N. E., Albuquerque, N. M. 87110 (phone 264-2315).

NEW YORK (Albany, Bethpage, Binghamton, Buffalo, Catskill, Chautauqua, Elmira, Griffiss AFB, Hartsdale, Ithaca, Long Island, New York City, Niagara Falls, Patchogue, Plattsburgh, Riverdale, Rochester, Staten Island, Syracuse): Gerald V. Hasler, P. O. Box 11, Johnson City, N. Y. 13760 (phone 754-3435).

NORTH CAROLINA (Charlotte, Fayetteville, Goldsboro, Greensboro, Raleigh): Elton Edwards, P. O. Box 37, Greensboro, N. C. 27402 (phone 275-7616).

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 323-2023).

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, Home-

stead, Horsham, King of Prussia, Lewistown, New Cumberland, Philadelphia, Pittsburgh, State College, Washington, Willow Grove, York): J. Deane Sterrett, 110 McMillen Ave., Beaver Falls, Pa. 15010 (phone 843-4589).

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): Roger K. Rhodamer, 412 Park Lake Road, Columbia, S. C. 29204 (phone 788-0188).

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 373-9339).

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): Vic Kregel, P. O. Box 9495, San Antonio, Tex. 78204 (phone 266-2242).

UTAH (Brigham City, Clearfield, Ogden, Provo, Salt Lake City): Robert D. Walker, 283 W. 550 N., Clearfield, Utah 84015 (phone 825-0267).

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): Lester J. Rose, 177 Corinthia Dr., Denbigh, Va. 23602 (phone 877-4372).

WASHINGTON (Port Angeles, Seattle, Spokane, Tacoma): Theodore O. Wright, P. O. Box 88850, Seattle, Wash. 98188 (phone 237-9865).

WEST VIRGINIA (Huntington): Evelyn E. Richards, 10 Berkley Place, Huntington, W. Va. 25705 (phone 529-4901).

WISCONSIN (Madison, Milwaukee): Kenneth Kuenn, 3239 N. 81st St., Milwaukee, Wis. 53222 (phone 747-5300).

WYOMING (Cheyenne): Edwin J. Witzemberger, Capitol Bldg., Rm. 116, Cheyenne, Wyo. 82001 (phone 632-7132).

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September 15, 16, 17, 18
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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 National Convention when requesting reservations. Otherwise, your reservation requests will not be accepted by the Sheraton-Park.

AFA's 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, and several other invitational events, including the Presidents reception, the Annual Outstanding Airmen Dinner, and the Chief Executive's Reception and Buffet Dinner.



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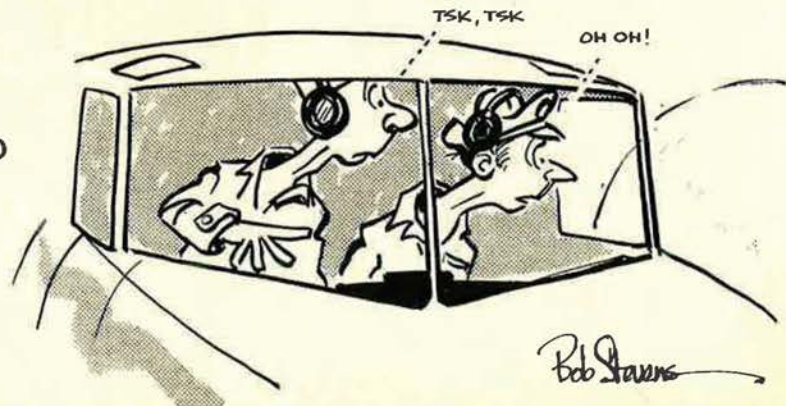
LANDING FLAP

A 6,000-FT LANDING ROLL ON A 5,000-FT RUNWAY.

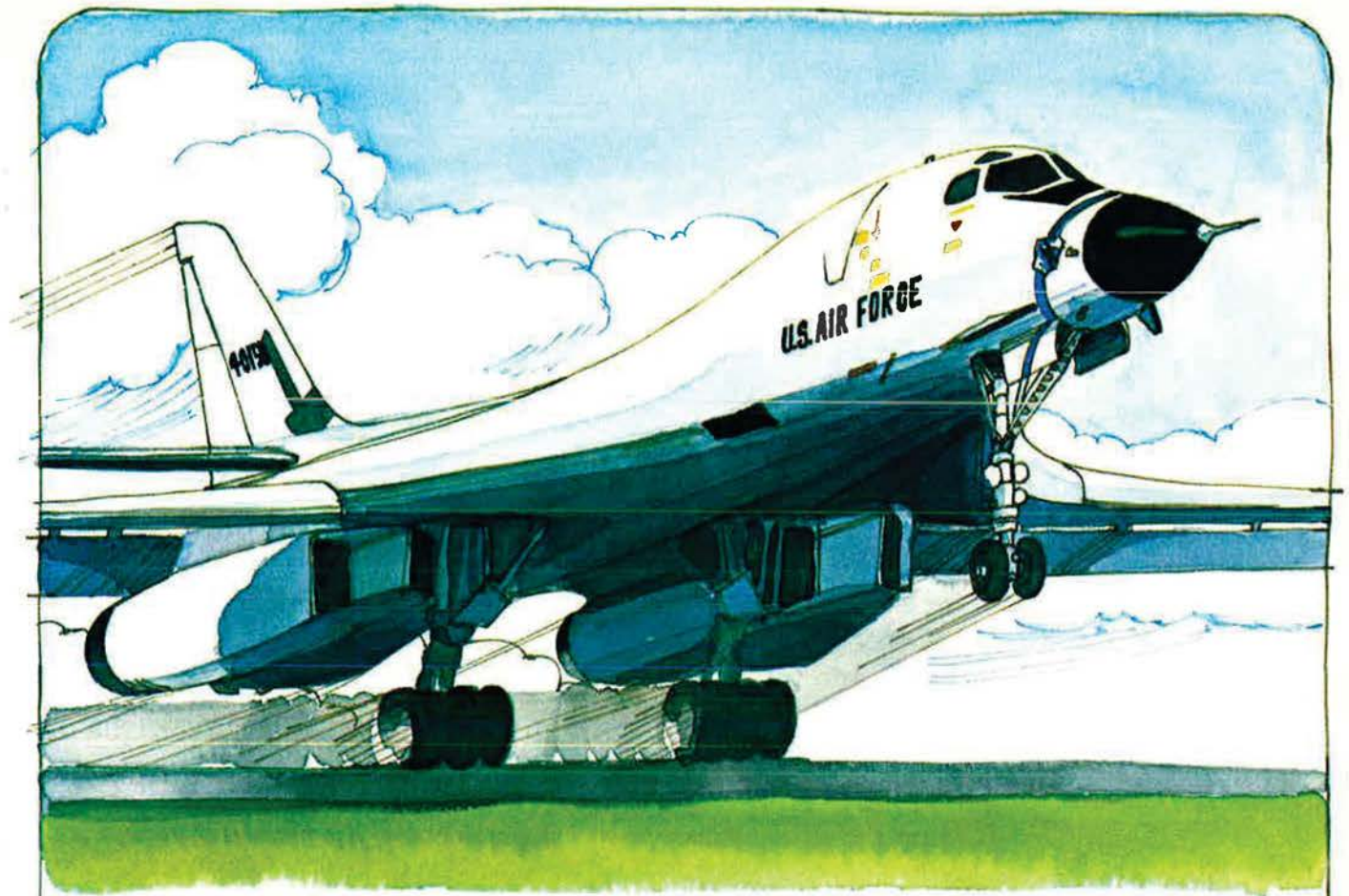


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