ARMY AVIATION

MAY 31 ★ 1966

If this is a cavalry mount, where do you put the saddle?

(see back cover)

Chinook PROGRESS

CHINOOKS "PIGGYBACK" ARTILLERY IN VIETNAM

The U.S. Army CH-47A Chinook is adding a "third dimension" to infantry warfare in Vietnam. Here, Chinooks of the 228th Assault Helicopter Battalion "piggyback" a 105mm howitzer and its ammunition over Viet Cong territory to a vantage point near the Cambodian border.

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Finding and fixing the enemy is made surer with the mobility provided by the Chinook medium transport helicopter.

BOEING Helicopters

VERTOL DIVISION / MORTON, PENNSYLVANIA, U.S.A.

SUMMARY

JUNE. 1966

THE CONCEPTS AND OBJECTIVES OF ARMY AVIATION TODAY

An address made by Brigadier General Robert R. Williams, Director of Army Aviation, at the AVCOM-Army Aviation Association Advanced Planning Briefing for Industry in St. Louis on 4 May 1966

I think I can best use the time allocated to me today by addressing my subject, *Concepts and Objectives of Army Aviation*, in the context of the recent agreement between the Army and Air Force Chiefs of Staff regarding the control and employment of certain types of fixed and rotary wing aircraft.

Several features of this agreement have been the subject of a certain amount of controversy. Many have asked, "*Just what has the Army gained?*" I must point out that under the agreement, the Air Force will attach certain of its aircraft to Army units. This support represents a new area of understanding and cooperation in the conduct of operations which has been sought by the Army for 20 years.

Other questions and my answers to them:

"*Is the Army getting out of the flying business?*"

No, it certainly is not. As a matter of fact, the *Caribous* being transferred to the Air Force amount to less than 2% of the Army's aircraft inventory.

"*Is the transfer of the Caribou to the Air Force just the first of many such moves?*"

Again, the answer is no.

"*Is the Army going back to the days of the 'Cub' and the two man observation helicopter?*"

The Army will continue to procure the aircraft it needs to support its role in ground combat.

"*Is the Mohawk next?*"

The answer is no.

I hope that today I can dispel some of the haze that might exist by reviewing with you the current Army policy with regard to aviation. Further, I would like to flesh out this policy just a bit by talking to what we are planning in the way of developing and procurement to meet the Army's aviation needs.

At the outset, I assure you that the Army will continue to exploit the inherent capabilities of aircraft to support the conduct of prompt and sustained combat operations on land. Just as we will continue to receive aviation support from the other services, so will we continue to provide organic aviation responsive to the direct control and planning of the Army commander.

Further, we will develop and acquire aircraft and aircraft command and control systems which are uniquely capable of fulfilling the requirements of immediate availability for sustained operation in a field environment. The only substantive change to previous policy brought about by the Chief of Staff agreement is the relinquishment of our claim for CV-2 and CV-7 aircraft and any future fixed wing aircraft designed for tactical airlift.

Now for some specifics.

In the field of observation, command and control, we will continue to procure and improve the OH-6 helicopter as a replacement for the OH-13, OH-23, and O-1.

STAAS as replacement

With regard to *reconnaissance and surveillance aircraft*, the Army will continue to procure the OV-1 and will product improve the aircraft to optimize it for the surveillance mission. The improved aircraft will be with us for an extended period pending the final determination of a *Surveillance and Target Acquisition Aircraft System (STAAS)* to serve as a replacement. The *STAAS* may be VTOL, V/STOL or STOL, depending on the characteristics defined for future requirements. Programs to provide improved sensors and related equipment for the *Mohawk* and the *STAAS* will continue.

Now to *transport aircraft*. In the past, Army procurement and R&D programs in the transport aircraft area have been based upon continuing the CH-47 and the CV-2/7 aircraft in the Army inventory as a team in meeting the tactical airlift requirements. Development efforts have been focused on product improvement of each of these types of aircraft and on exploration of the practicability of developing a single aircraft to replace both the CV-2/7 and the CH-47. Major questions concerning the practicability of replacement with a V/STOL aircraft have centered around the effect of high downwash velocity, noise level, maintenance and complexity of typical V/STOL aircraft in Army field operations.

To obtain answers to these questions for all three Services, each in its own environment, the XC-142 was developed on a tri-Service basis. Until substantive data from field testing of the XC-142A in the Army environment is produced, a determination cannot be made as to the applicability of this or similar V/STOL concepts to the Army mission or to an Air Force mission in support of the Army.

The Army considers that the XC-142 and related projects may provide information on a potential aircraft that could replace the CH-47 for the Army mission or replace the CV-2/7 type aircraft for the Air Force mission in support of the Army. (In the latter case, the Army would take a firm and knowledgeable stand in establishing the acceptability of the aircraft since it would be operating in the Army area.)

Compound helicopters

In the event that a tilt wing is found suitable to replace both the CH-47 and the CV-2, a determination should then be made as to proportionate numbers of this aircraft to be assigned to the Army for battlefield mobility and the Air Force for logistics. Army development efforts should be placed on full scale compound composite helicopters which technical forecasts indicate may be more suitable candidates as eventual replacements for the CH-47.

As to *Utility Tactical Transport*, the UH-1D should meet Army requirements in this area for the immediate future. However, the Army will continue study and consideration for the development of a replacement of the UH-1D with the following improvements:

- Improved cruise speed and efficiency.
- Longer endurance.
- Improved payload and performance under hot day conditions.

(Continued on Page 38)

ARMY AVIATION

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FEATURES

DEPARTMENTS

ADVERTISERS

X-22A FLIGHT IS BIG STEP FORWARD FOR V/STOLs

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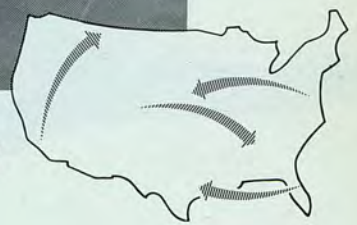

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THE EIGHTH DIRECTOR

The eighth Director of Army Aviation, Brigadier General Robert R. Williams, served as an Assistant Division Commander of the 2d Infantry Division in Korea prior to reporting to OACSFOR, DA as Director on 11 April 1966. From August, 1963 to April, 1965 General Williams served as Deputy Test Director and Commanding General of the group at Fort Benning, Georgia that tested and evaluated the 11th Air Assault Division and 10th Air Transport Brigade. From March 1962 to August 1963 he served as the Commanding General of the U.S. Army Aviation Center and Commandant, USAAVNS at Fort Rucker, Ala.

Born June 30, 1918, in Evanston, Wyoming, General Williams' achievements in the field of Army aviation began shortly after he was graduated from the U.S. Military Academy in 1940. Commissioned in Field Artillery, an early assignment in aviation came in December 1941, when he was named operations officer for a select group of 30 field artillerymen who were to test aircraft for use by the artillery.

In June 1942, when the Department of Air Training was formed in the Field Artillery School, General Williams was appointed Chief of the Flight Division, and became the first ground force officer to receive an instrument rating. In 1947 when he was Aviation Officer of the U.S. Constabulary in Europe he organized the first ground force operational aviation unit, The U.S. Constabulary Flight Detachment.

Prior to his assignment to the U.S. Army Aviation Board at Fort Rucker, of which he was the organizer and its initial president, General Williams was the first chief of the Army Aviation Branch, G3, DA, the agency that later became the Directorate of Army Aviation.

General Williams departed from the Aviation Board in 1958, and after attending the Army War College, was assigned Chief, Air Mobility Division, OCRD, DA in Washington, D.C. Then for the one year preceding his assignment as Commander of Fort Rucker, General Williams served in the Office of the Secretary of Defense.

Well known in Army aviation, he was the first Army Aviator to receive the designation of Master Army Aviator. He first learned to fly as a civilian in 1935, and is qualified in many types of aircraft to include Navy jet aircraft. He's maintained close professional affiliations with many associations, having participated in AUSA, IAS, AHS, and AAAA affairs. One of the seven founders of the latter organization, he served as the AAAA's initial national executive vice president.

He received the Alexander Klemin Award for 1961 for "notable achievement in the advancement of Rotary Wing aeronautics," and in 1962 served as a panel leader on The Army Tactical Mobility Requirements Board ("Howze Board").

General Williams and his wife, Jean, have three children, Robert B., who is a cadet at the US Military Academy; Kathleen and Keith. The Williams family considers Greeley, Colorado, as their official home.

LET'S INSURE THE MOMENTUM!

by Brig. Gen. Robert R. Williams
DIRECTOR OF ARMY AVIATION, OACSFOR

It is indeed great to be back in the "bloodstream" of Army aviation. While the position of Assistant Division Commander in one of our outstanding infantry divisions is a rewarding and satisfying job, it is also somewhat frustrating when it occurs during one of the "explosive" growth years of Army aviation.

So much has been accomplished in the past year in terms of aviation units, aircraft procurement, and aviator training that it is difficult to grasp from the outside looking in. We in the aviation family owe a great tribute to *General "Phip" Seneff* and *Colonel "Del" Bristol* for the outstanding manner in which they have kept Army aviation moving forward in such a sound and orderly fashion.

My task will be to insure that this momentum continues and that our combat units in Vietnam and the rest of the world have the best aviation support possible. I know I will continue to receive the same loyal dedicated support that has become the trademark of the Army Aviator.

Enroute home from Korea I had the privilege of visiting Vietnam for about 10 days. One cannot visit this area without receiving a lasting impression of the tremendous job being done by Army aviation in the struggle against the Viet Cong.

From the Delta to the jungles of I Corps, U.S. and Vietnamese commanders had the highest praise for our performance. I observed the Army aviation units accomplishing their missions in a most professional manner. Whether it was the *Caribou* delivering food and ammunition to an isolated Special Forces outpost or an airmobile unit delivering combat troops to the landing zone, the "can do" spirit was always present.

More Than Their Share

I was also impressed with the tremendous effort on everyone's part to do more than their share in this vital struggle. Army Aviators were everywhere – constructing airfields – performing maintenance – advising Vietnamese Forces – building comfortable bases for their own use as well as carrying out a multitude of civic action programs to assist the local populace in making their life a little more enjoyable.

I suppose that it is only natural that the

HEAVY LIFT

Boeing heavy lift helicopter (HLH) configurations now under study include a 30-ton crane-personnel carrier (center) and the Boeing-Vertol 227 (left), a stretched version of the Army's CH-47A Chinook (right model).

most personal satisfaction I realized from the trip was to witness the resounding success of the air-mobility theory long proposed by *General "Ham" Howze* in his board and so convincingly demonstrated in Air Assault II. With minor exceptions brought about due to local conditions the theory has proven tremendously successful. Without question the conflict in Vietnam has truly demonstrated that Army aviation is a vital partner in the combined arms team.

An Innervating Effect . . .

The success of this theory can best be summarized by using the comments of *General Westmoreland* in a recent letter to *General Johnson*. In commenting on the 1st Cavalry Division, he stated, "*They have been enormously successful in bringing about a new dimension and a new character to the battlefield where they have been engaged. This character of operations has had a marked innervating effect upon other units, U.S. and Allied alike, in Vietnam.*"

The significance of General Westmoreland's comments are more fully appreciated when you look at the string of "*Firsts*" accomplished by the "*First Team*" during the period of 19 September through 31 December 1965.

• First time in the history of land warfare a divisional size unit operated continuously over a prolonged period of time in difficult terrain, devoid of roads, and relying primarily on aircraft in every aspect of its operations, to include logistical support.

* * *

• First time in the history of land warfare that tube artillery was employed extensively in roadless, mountainous, jungle terrain through the use of aircraft as a prime mover.

* * *

• First time in the history of land warfare that aerial rocket artillery was employed at night in close support of friendly positions.

* * *

• First time in the Vietnam War that a prolonged and relentless pursuit of a major enemy force was conducted by airmobile troops. To quote a portion of the official report from the Pleiku campaign 23 October-26 November 1965, "*The enemy was routed from his hiding places, hounded and pursued, fragmented and destroyed, in terrain he had believed would be his protector. Certainly nothing in the enemy's background*

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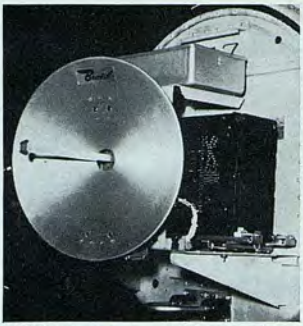

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or training had prepared him to cope with the full effects of an unleashed airmobile pursuit."

* * *

• First time in the history of land warfare that large heliborne forces were tactically employed at night.

* * *

• First time in the Vietnam War that strategic air strikes (B-52) were used in direct support of the ground scheme of maneuver.

* * *

• First time in the Vietnam War that American airmobile units met and defeated enemy units fighting as battalions and regiments under divisional control.

Impact On TOE's

A wealth of experience has been gained in our efforts to date. Many of these will be catalogued to assist other aviation units who are confronted with similar problems in the future. Some of them are having an immediate impact on our TOE's, doctrinal publication, Field, Training, and Technical Manuals.

If each of us will only take a little extra time to insure that these lessons learned do not have to be relearned in future conflicts, we will have achieved a major accomplishment. I urge each of you to accomplish your part in such an undertaking.

General Johnson, our Chief of Staff, in an address on 27 April 1966, before the Economic Club of New York presented some thoughts on Army aviation in general and on the magnitude of Army aviation's contribution to the Vietnam conflict which I believe you will find interesting. He said:

GENERAL JOHNSON

"*Both Army and Air Force aircraft distribute supplies in-country. There is an analogy here with a supermarket in the United States. The market receives its supplies, generally in bulk lots and carried in large vans, from the major distribution center which in turn is fed by trains, trucks and ships. But from the supermarket to the customer, where only small and assorted amounts of supply are required, the reliance is on the customer's car, for it becomes too expensive and impractical to try to deliver retail orders by large van, which would have difficulty finding local addresses and could not get in and out of narrow side streets.*

Air Force airlift is functioning in what might be called the wholesale delivery role over long distances while both Air Force and Army aircraft are carrying out the retail delivery function in support of deployed combat forces, often times within small arms fire of the enemy. In recent months, the tonnage carried by Army aircraft has averaged over 30,000 short tons of passengers and cargo per month.

Rotary Wing Emphasis

Under a recent agreement the Air Force will soon assume greater responsibilities for retail cargo delivery. The Army will thus be freed to devote greater attention to the rapidly increasing battlefield use of the helicopter.

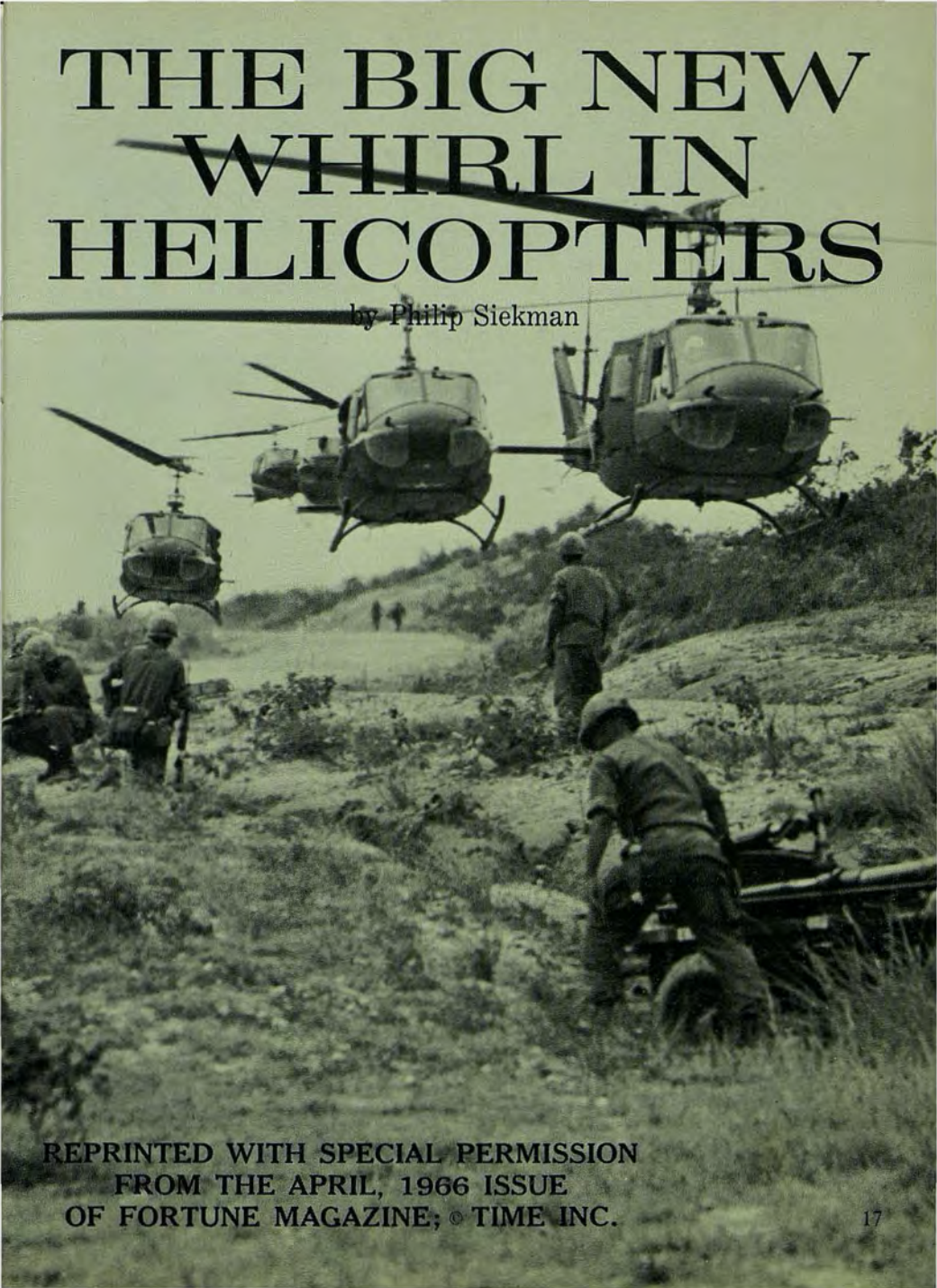
Battle experience testifies to the durability of the helicopter. In over three years' experience, a helicopter flying on a combat mission has been hit by ground fire once in every 400 sorties; has been knocked down by ground fire once in about 8,000 sorties; and has been lost due to ground fire only once in 16,000 sorties. We are recovering one out of every two helicopters shot down, so these helicopters can live to fight another day."

* * *

I recognize that this article has been rather short. My goal in the future will be to provide you a mixture of personal and professional information which will keep you posted on significant plans for the immediate as well as the long-range goals.

THE BIG NEW WHIRL IN HELICOPTERS

by Philip Siekman



All wars are the same, just the tools are different. What is different about this one can be seen clearly at An Khe, a village in Vietnam's central highlands and headquarters of the U.S. First Cavalry (Airmobile). Here, on a large, crudely cleared field sardonically called "the Golf Course," is the greatest concentration of combat helicopters in the world: giant Sikorsky-built *Flying Cranes,* which can land ten tons of cargo in a space smaller than their own shadow, huge Boeing-Vertol *Chinooks,* which loft forty-four infantrymen into battle at speeds up to 150 miles per hour, small Hiller and Bell observation aircraft, looking like nothing so much as mechanical dragonflies, and two classes of the ubiquitous Bell *Hueys,* fleet, armed UH-1 *Bravos,* and larger, troop-carrying *Deltas.*

The 1,600 helicopters in use in Vietnam have changed the course of the war. Without the mobility and speed provided by these noisy, gawky machines, the position of the Vietnamese and U.S. forces would be far different. At the least, as one helicopter expert puts it, "*we would be using, and losing, a lot more men.*" At the worst, defeating an elusive enemy moving like a shadow in the Asian hills and dense-foliaged valleys would be impossible.

Great Expectations

The helicopter's impressive achievements in Vietnam are most vividly recorded in reports of tactical victories. Dryer, but just as dramatic, evidence of the impact these successes are having on the helicopter industry is found in the Department of Defense budget. In the current fiscal year, Defense is spending $1.3 billion on helicopters, more than it spent in the last three years combined. This year's purchases of 3,156 machines will increase the U.S. inventory of military helicopters by nearly 50 percent.

The sharp rise in military sales means more than a temporary war-inspired boom for the helicopter producers. It also means that the Army, after years of hesitation, has accepted the helicopter as a versatile and basic tool of war. Therefore, the industry, which has had more poor years than good ones, can look for repeated military orders regardless of the length of the Vietnam conflict.

Helicopter producers also expect that use of their machines under the arduous conditions of combat will lead to improvements in reliability and economy. The resulting new and better machines should help open up the long predicted, but never realized, civilian helicopter market. The oldest and fondest dream, a helicopter in every garage, may turn out to be just a dream.

But this expectation has been replaced by other visions – clusters of helicopters in corporation parking lots and clouds of giant aircraft rising vertically from the downtown of one city to shuttle passengers to the center of the next. This year three manufacturers, Fairchild-Hiller, Bell Helicopter, and Hughes Tool's Aircraft Division, are introducing new executive and utility helicopters derived from military designs. Flying buses are further off in the future, but a score of designs are now on the drawing boards.

$1.3 Billion Purchase

Great expectations are endemic to the helicopter industry. Today's hopes, however, are more solidly based than past dreams ever were. Both helicopters and the companies that turn them out have become larger, more stable, and in some cases busier. A decade ago most of the producers were small firms managed by visionary founders.

Now Bell has become a part of the Textron empire. Hiller has been absorbed by Fairchild Stratos. And, perhaps more significant, the major aerospace companies have arrived on the scene. In 1960, Boeing bought up Vertol, a Philadelphia-based firm founded by Frank Piasecki, the second American to build a workable helicopter. In 1961, Hughes Tool's Aircraft Division marketed its first helicopter. And last year the grand matron of aerospace, Lockheed Aircraft, walked off with a contract to develop a fast, heavily armed helicopter fighter, after a military competition in which it defeated the company that founded the business, United Aircraft's Sikorsky Division.

The big newcomers are convinced that

the industry, like its product, can take off vertically. All are spending heavily to make sure they get their share. Boeing paid some $15 million for Vertol and put $70 million more into the business before it turned its first profits. Lockheed, which won't set up a production line for at least another year, has spent a minimum of $17 million on helicopter research. And Hughes has obtained what could become the largest order in the industry's history by cutting its price so low that competitors estimate it will lose $10 million or more on the initial contract.

Enthusiasm for helicopters tends to be inversely proportionate to experience. Older companies, which view the future with considerable reserve, suspect (and in some cases hope) that the big newcomers' investments may prove to be more a measure of courage than of wisdom.

Since 1939, when Igor Sikorsky flew his first helicopter, several hundred U.S. helicopter development programs have been started. All but a few companies have failed, including McDonnell Aircraft and Cessna, both experienced airframe producers, and both unsuccessful in attempts to land military helicopter contracts. At times it has seemed that the industry's most fitting symbol is not the whirling rotor blade but Icarus plummeting from the sky in vivid demonstration of the fact that when imagination outruns technology it is wiser to walk.

The Founders Survive

The companies that have survived to dominate the industry are the same five that founded it. Sikorsky, of course, was first. It was soon joined by Piasecki (now Boeing-Vertol) and these two firms have divided up the transport or large-helicopter market. Bell, Hiller, and Kaman got under way at the end of World War II. The first two have built light utility or observation aircraft. Kaman has light-footed its way through the field by sticking to specialized machines mainly used by the Air Force and Navy for crash rescue work.

Despite this apparent concentration, the industry is overcrowded. Hughes and Lockheed have elbowed their way in at the expense of the pioneers. A closer look at that field outside of An Khe illustrates the industry's difficulties. The helicopters there were made by four manufacturers. But the Army has purchased only six Sikorsky *Flying Cranes* and has only six more on order. All of the Hiller machines are going to be replaced by the helicopter Hughes is selling at a loss. The other two firms represented, Bell and Boeing, are in fine shape, at least for the moment.

Exact figures are classified, but probably 80 percent of the helicopters purchased by the Pentagon this year will be supplied by these two companies. It would appear that other manufacturers are living as much on hope or on their parent companies' largess as they are on sales.

The Cantankerous Marvel

The helicopter itself is responsible for many past and present difficulties. The machine has some marvelous virtues. It can take off and land vertically, fly forward, backward, and sideward, hover almost motionless in the air, and, so long as it is above a given speed or altitude, return to the ground safely and gently on a dead engine. "*The helicopter,*" says Igor Sikorsky, "*is the most free vehicle of travel used by man.*" It is also one of the most cantankerous. The early models especially were expensive to build, difficult to fly, and a nightmare to maintain.

Many of the problems are related to the helicopter's most basic element, the moving wing or rotor. The rotor system, which provides lift, propulsion, and control, requires a costly transmission system, sets in play various physical forces that must be overcome by complex means, and establishes a seemingly absolute limit on forward speed somewhere below 300 miles per hour.

The moving wing also requires a huge amount of power. To meet this demand more efficiently, most producers began experimenting with turbines, rather than conventional piston engines, as early as 1952. The turbine, says one man, "*made honest men of helicopter salesmen.*" Its high ratio

(Continued on Page 22)

Ordered into production!

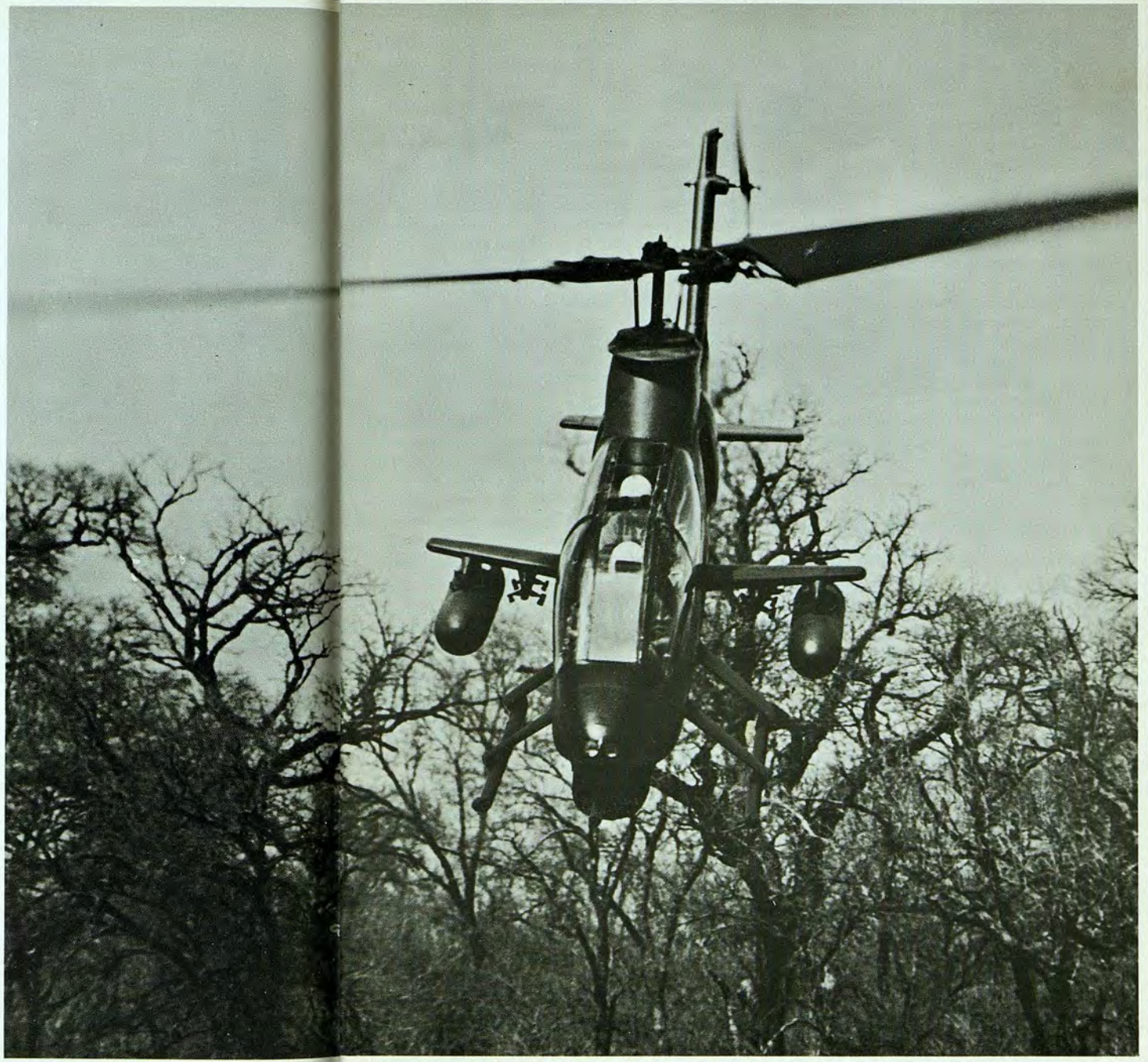
WORLD'S FIRST WEAPONS HELICOPTER

. . . the U. S. Army HueyCobra

Lean and mean, the Army's new high-speed HueyCobra will give unit field commanders new, versatile, powerful airborne fire support. Compared to the Huey "B" on a 50-mile mission, the HueyCobra will arrive in **one-half** the time with **twice** the firepower and **three times** more staying power in the objective area. ■ Selection of the HueyCobra was prompted by a need for an improved weapons helicopter which could be supplied quickly, at low cost and with the least impact on the Army's supply and training base. ■ Bell's creative R & D engineers modified the UH-1B Iroquois into a real, high-speed weapons ship. Commonality between the two helicopters includes combat-proven dynamic components and the Lycoming T53-L-13 gas turbine engine. ■ Features of the HueyCobra include an advanced flexible gun turret, latest integrated armor protection for crew and critical components and four live hardpoints for rockets and external stores on the wings. ■ Because of commonality with the "B", the Cobra can be produced on the Huey line. ■ Acute awareness of the Army's mission, backed up by a responsive engineering staff, again proves Bell's capability to provide *more helicopter* per defense dollar through R & D.

BELL HELICOPTER

FORT WORTH, TEXAS 76101 • A textron COMPANY



BIG WHIRL/Continued

of horsepower to weight opened the way to the development of helicopters that were faster, easier to fly, less costly to operate, and, to a considerable extent, unlimited in size and load-carrying ability.

The turbine engine raised the helicopter's already high price tag by a considerable margin, a main reason why small turbine-powered machines haven't appeared on the civilian market until this year. But its efficiency and relative ease of maintenance made large-scale military use of helicopters feasible, a fact military planners were slow to recognize. Although over 2,000 helicopters were purchased by the armed forces during the Korean war, most military men felt that the balky machine would be useful for only a few missions other than as a battlefield ambulance. When the Army sought design proposals on its first turbine-powered machines in 1954, its chief request was a cabin large enough to carry three litter patients and a medic.

Big Market For A Select Few

Bell Helicopter won this Army contract in 1955 with a helicopter now officially known as the UH-1 Iroquois, but usually called the "*Huey*" (The name derives from an earlier classification, HU-1.) Larger than the two-seater observation machine and smaller than a full-scale transport, it was a new class of aircraft. Bell delivered the first one in 1959.

Since then it has slowly introduced improvements that have kept the Army content and blocked the way for a competitor's totally new design. With no large military contracts available to help underwrite development costs, Bell's competitors haven't even tried to build a similar machine. Bell has held on to its Army business, obtained Air Force and Marine Corps orders, and sold versions of the *Huey* to seventeen foreign governments.

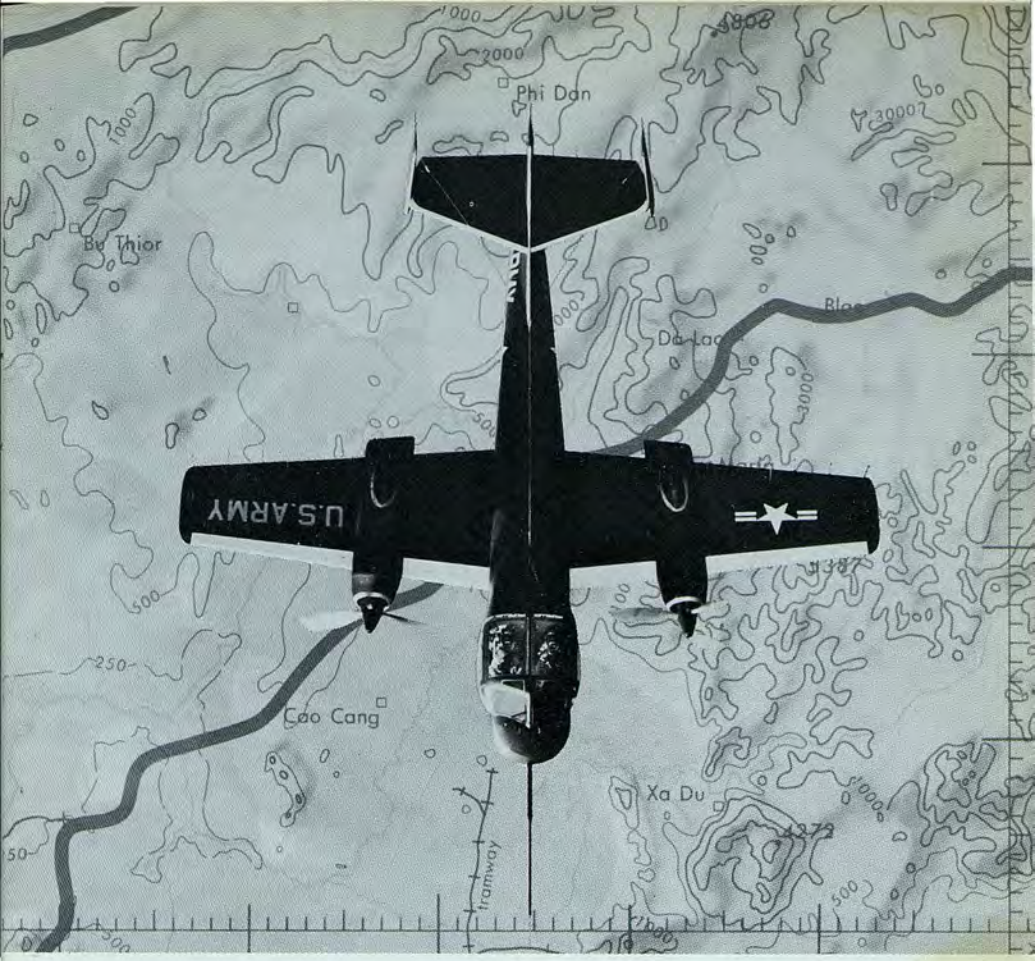
The next large military competition came along in 1958 when the Army decided to replace its Sikorsky and Vertol piston-powered transports with a larger and faster turbine helicopter. Vertol won this one in 1959 with its design for the huge, fifty-one-foot-long *Chinook*. Potential sales were attractive enough to encourage Boeing to purchase the company a year later, but Boeing had no idea just how sweet its rewards would be. At the outset, the twin-turbine *Chinook* was designed as an aerial truck, its size and shape being dictated in part by the Army's need to haul the Pershing missile system.

But as Boeing tooled up – the first production model came off the line in 1961 – the Army's attitude toward helicopters and their potential was beginning to change. By this time the Marine Corps, which had begun experimenting with helicopters even prior to 1950, had totally revised its tactics to take advantage of the mobility and speed of helicopter-borne units. Increased experience with turbine engines and the growing likelihood of limited war in Southeast Asia encouraged the Army to start moving in the same direction.

In late 1959 a committee of Army aviation officers met to consider their aircraft requirements for the next decade. They effectively decided to standardize on two helicopters already on order, Bell's *Huey* and Boeing's *Chinook*, and a new observation aircraft. Since that time the air-mobility concept has been tested, tried in battle, and accepted. Estimates of the number of helicopters needed by the Army have been altered. But, with only one important exception, the original decision to get along with three basic helicopters has not been changed.

A "Strange Company" Buys In

An industry-wide competition for the contract to build the new light observation helicopter, the *LOH*, got under way in the winter of 1959-60. The stakes were awesome. It appeared to be the most important military business available for years to come. The potential volume of sales was huge; the Army estimated its requirements at about 4,000 ships. Moreover, the manufacturers were sure that a modified version of the



Coming Through The Rice

On duty with the U.S. Army in Vietnam, the Grumman OV-1 Mohawk provides across-the-board reconnaissance and surveillance information directly to the ground commander. This vital data includes photographic, infrared and radar imagery.

To the Mohawk's broad reconnaissance capability Texas Instruments now offers fully automatic terrain-following flight and forward-looking ground mapping through use of the AN/APN-165 radar. A prototype of this TI subsystem, developed by the Army's Electronics Command to permit day or night low altitude penetration and navigation updating for the OV-1, has completed flight tests at Fort Huachuca, Arizona.

Reliance on TI's new radar would enable Mohawk pilots to fly nap-of-the-earth missions 24 hours a day, taking advantage of terrain features wherever possible.

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BIG WHIRL/Continued

high-speed, easily maintained helicopter specified by Army aviation planners would find a ready civilian market.

The helicopter industry now looks back on the *LOH* competition with about as much nostalgia as English peasants must have felt when recalling the Hundred Years' War. It was long, unpleasant, and confused by a number of side issues. What's more, now that it is over, some doubt remains about the value of the victor's prize.

Bell and Hiller appeared to have the inside track. Up to that time they had built all of the Army's small helicopters. With so much at stake, however, the two companies were joined by a horde of hopefuls that figured it was now or never. Forty-four companies submitted 119 design concepts, which included not only helicopters but conventional light planes and other types of vertical-takeoff aircraft.

In January, 1961, after the Army had ruled out everything but helicopters, proposals were submitted not only by Bell, Hiller, Kaman, Sikorsky, and Vertol, but also by Cessna, McDonnell, Republic (since purchased by Fairchild), Doman (a pioneer that has consistently struck out), Gyrodyne (it makes small one-man and remote-controlled helicopters for the Navy), Lockheed, and Hughes Tool's Aircraft Division, whose executives had concluded that "*the helicopter business was ready to take off.*" Hughes decided to jump in, substituting talent for experience.

In May the Pentagon narrowed the field to Hiller and Bell. Then, in a chain of still confusing events, Hughes was invited back into the competition, despite the opinion of one of the design evaluators that its concept was technically impossible. Each company was given $6 million to build five prototypes of its design around a new 136-pound Allison turbine engine. All spent another $2 million or more of their own funds before delivering the aircraft to the Army for competitive testing in the winter of 1963-64. In October, 1964, the Army, after much hemming and hawing, finally ruled out Bell's entry on the basis of the tests and announced that a decision between Hiller and Hughes would be made on the basis of price.

Both Hiller's and Hughes's helicopters are remarkable aircraft, far superior to any other small machine flying. Each of them, however, was the product of a distinctly different design philosophy. In its request for the *LOH* design, the Army had indicated that it would not increase the machine's capability and performance by later modifications. Hiller decided that the military men were wrong and could be made to see the error of their ways. Every other military helicopter has improved in successive model changes. Hiller offered the Army a sturdy machine that could be modified later for improved performance without major changes in the airframe.

An Optimum Design

Hughes decided to give the customer what he wanted, right or wrong. It delivered a stripped-down optimum design. By sacrificing growth potential, Hughes came up with a helicopter that is smaller, lighter by some 400 pounds, and considerably faster than the Hiller version. Carrying five men and a pilot, the Hughes *LOH* (it is now known as the *OH-6A)* cruises at 130 miles per hour. With a smaller load it can probably reach 170 mph.

The heavier, seemingly sturdier Hiller machine appeared to offer greater reliability and fewer maintenance problems. The Hughes model was a hotter ship. When the Army, like a child in front of a pastry cart, couldn't decide which it wanted, the issue came down to price. The Army originally had indicated that it expected to pay $50,000 for the helicopter airframe plus another $13,000 for the Allison engine. Hiller and Hughes, however, decided to reduce their

bids and take a loss on the Army's first production order for 714 aircraft.

Although Hiller officials estimated that the cost of materials alone in their *LOH* would amount to 35,000 (not including the government-supplied engine and electronic gear) for each helicopter, they quoted a price of $29,000, which would have left them out of pocket by more than $4 million on the first order, plus their development costs. Hughes wanted to get into the helicopter business badly. It underbid Hiller by nearly one-third with a price of $19,860, again not including the engine supplied by Allison.

Shortly after the *LOH* competition concluded, Hughes took another Army contract away from Hiller when it gained a $5,500,000 order for 215 primary helicopter trainers. With his entire military business now gobbled up in two bites, a Hiller manager observes almost wistfully, "*Hughes is a strange company. They're tough competition if only because they can elect to take their profits or not.*"

Looking forward, Hughes officials are confidently predicting that they will sell upwards of 8,000 *LOH's* to the military services, foreign governments, and civilians. They also state flatly that after the initial order, which can be increased to 1,071 aircraft, the price will be based on cost plus a reasonable profit.

This year Hiller is practically starting over from scratch. As the *LOH* competition came down to the wire, the company was sold first to Electric Autolite and then to Fairchild Stratos. Last fall Stanley Hiller left the company, muttering bitterly about competitors who buy contracts, and the California plant was shut down. Hiller's civilian helicopters are now being manufactured in a Hagerstown, Maryland, plant, along with Fairchild's transport airplanes and a Swiss-designed short-takeoff airplane.

Playback From Vietnam

While the *LOH* competition poked along, the Marine Corps also decided to modernize. The Marines were quicker on their feet than the Army. In the space of two years, 1961-62, they picked Vertol's *Sea Knight* as their light transport helicopter, bought a version of Bell's *Huey* off the shelf, and chose Sikorsky to build the biggest helicopter in U.S. production, the $950,000 *CH-53A*. The first *CH-53A's* are being delivered this summer.

Sikorsky had sold a number of new helicopters to the Navy, Coast Guard, and Air Force and, of course, had built most of the piston-powered Army and Marine Corps transports. But the *CH-53A* award was the first sizable military competition it had won since 1951. Naturally, Sikorsky was jubilant. But that warm sense of well-being proved short-lived. In 1965, Sikorsky became the second pioneering producer to get mauled by a newcomer from the West Coast.

A Speedy Hybrid

The battle was joined in a design competition for a totally new helicopter, the *Advanced Aerial Fire Support System*, the *AAFSS* (a-fiss). Almost from the start in Vietnam, the military saw the need for covering fire when helicopters are setting troops down in a combat area. It also became evident that helicopter groups need some means of suppressing ground fire encountered on their flights. The armed *Huey* was the first response to these needs, and armed versions of other helicopters are now being evaluated. But Army aviation officers wanted a new helicopter, heavily armed and extremely fast, to escort the transports, suppress ground fire in the landing zone, and carry out aerial-fire support missions.

The Army wanted the *AAFSS* to cruise at better than 230 miles per hour, below the theoretical capability of a pure helicopter, but probably in excess of its practical cruising speed. To get the necessary speed, the Army decided on a compound helicopter, a hybrid that performs like a helicopter at low speeds, but that uses wings and some type of propulsion in addition to the rotor in horizontal flight.

Although most helicopter manufacturers have experimented with compounds for many years, the *AAFSS* contract quickly came down to a choice between Sikorsky

(Continued on Next Page)

BIG WHIRL/Continued

and Lockheed Aircraft. Both submitted designs for winged helicopters using a conventional rotor for vertical flight and a tail propeller for additional propulsion at high forward speeds.

Lockheed was a raw newcomer. It first began working on helicopters in the late Fifties with hopes of designing some sort of family flying machine. To make the helicopter more stable and easier to fly, Lockheed engineers devised an unusual "rigid rotor" system. It is supposed to give a helicopter the stability and control of a light plane, a claim the rest of the industry isn't ready to concede. The company, however, soon lost its enthusiasm for a family machine. The inherent complexity of a helicopter probably means that its price always will be higher than most people can afford for transportation. Furthermore, the task of piloting any aircraft, no matter how stable, is beyond the capability of enough people to frustrate hopes for a mass market.

Nevertheless, Lockheed continued to work on the "rigid rotor." In the early Sixties it built two test ships under a Defense Department research contract as well as another similar machine for NASA. In 1964 the company tacked wings and an external jet engine onto one of these test models and later set a blistering unofficial rotorcraft speed record of 272 miles per hour.

Lockheed admits to spending upwards of $17 million on helicopter development so far – a figure that is probably conservative. But last November it was notified that it had won the *AAFSS* competition and is now building ten prototypes.

The *AAFSS*, which will be the first compound helicopter to go into production in the U.S., is a long technological leap forward from the rigid-rotor test ships. It will be a big, heavy ship full of exotic electronic gear, and Lockheed could encounter trouble converting its ideas from paper to sheet metal. But if the *AAFSS* goes into production, the Army will pay close to $900,000 each for 800 to 1,000 aircraft.

The loss of the *AAFSS* award left Sikorsky with only bits and pieces of the military market. The Marines have ordered about 100 *CH-53A's*. But even with this production line going full tilt, Lee Johnson, Sikorsky's president, sadly estimates that his huge plant in Stratford, Connecticut, is running at only 40 percent of capacity.

Not Everybody's Boom

Sikorsky has been one of the few companies in the industry willing to build new helicopters without the help of military development contracts. It has not yet gone ahead with its *AAFSS* design. But it is gambling its own money on the *Flying Crane*. Development costs on the aircraft ran to about $10 million. So far, two *Flying Cranes* have been sold to West Germany and six have been delivered to the Army for $2 million each. The Army, which lost one of the *Flying Cranes* in combat, has six more on order. It would like to buy another dozen or two over the next several years if it can pry funds loose from the Defense Department. But the breakeven point may be as high as sixty aircraft.

Sikorsky's plight reflects the problems that beset the helicopter industry as a whole. There isn't enough military business around to provide everybody with a reasonable living. Even currently prosperous Bell and Boeing have some cause for concern. The big jump in 1966 sales resulted from a speed-up in which a five-year Army and Marine helicopter-acquisition plan has been compressed into about three years. Some of Bell's and Boeing's 1966-67 sales are being made at the expense of what would have been future orders.

Of course, an unfavorable turn in the Vietnam war could drastically change the outlook. Another Airmobile division, for example, would need between 400 and 500 helicopters. Another Marine Corps air wing would require about 150. If the services wanted to create these or other helicopter units quickly, Boeing, Bell, and Hughes probably would not be able to meet the demand. The business would have to be spread around a bit.

Further U.S. experience in Southeast Asia

could also lead to another specialized machine in addition to the *AAFSS*. "*Until Vietnam*," says a Defense official, "*we were sure we had found the most effective application of the helicopter and we were wrong. We may yet find different ways to exploit its capabilities.*"

But Army aviation officers don't foresee a need for still another type of helicopter. And the Marine Corps, the other large buyer, is likely to be content with what it has in hand or on order for some time.

The only sure military business coming up is a new anti-submarine-warfare aircraft for the Navy and, at some point several years from now, a new helicopter to replace the *Huey Delta*. (The *Huey Bravo* will be replaced by the *AAFSS*.) "*If Bell doesn't get that one*," says one competitor, who still wouldn't mind trading places, "*I don't know what they're going to have.*"

Building A Civilian Market

The helicopter industry has been criticized, on Wall Street among other places, for not doing more to expand sales by building a civilian market. "*The only time they make a major effort is when a big military contract is coming up*," says an investment banker. There is some truth in this. But the biggest obstacle to civilian sales is the machine itself. Its admittedly unique capabilities demand a steep price in original cost and upkeep. The cheapest conventional helicoter available is a $23,750 two-seater, made by Brantly. Some of the Hiller models are in the $50,000-and-up class. And a commercial version of Bell's *Huey* goes for a cool $325,000.

There are now about 2,000 helicopters in civilian service in the U.S., including 400 purchased last year for some $43 million. All but a few dozen of these helicopters are small two- or three-seaters, used for such chores as air taxis, crop dusting and surveying. In all, seven manufacturers will be competing for commercial helicopter sales this year, including two courageous small companies that have entered the business recently without the help of military sales, R. J. Enstrom Corp. in Menominee, Michigan, and Brantly Aircraft in Frederick, Oklahoma. (Small helicopter producers turn up in the most unlikely places.)

Enstrom is bringing out a sleek three-seater that is easily the best-looking small helicopter around. It hopes to sell thirty aircraft in 1966 at $32,750 each. N. O. Brantly, who made his money in textiles and is now spending it at a rate of $100,000 to $150,000 a year in helicopters, is producing a small machine that looks like nothing less than an ice-cream cone flying horizontally through the air. Later this year Filper Research, founded by some dissident Lockheed and Hiller engineers, also expects to roll out a small helicopter.

Parking Lot To Parking Lot

The visible growth possibilities for small helicopters are hardly intoxicating. In all, probably not many more than 500 machines will be sold to U.S. civilian users this year. The manufacturers, however, have their eye on a growing class of customers who, they hope, will be willing to pay for the helicopter's remarkable capabilities: executives of major U.S. corporations who must travel frequently between scattered, though not too distant, plants and offices.

Helicopter salesmen point out – with a great waving of charts and graphs – that business air travelers actually spend much of their time on the ground going back and forth to airports whether they use the airlines or have their own million-dollar jets. A machine that could hop from plant parking lot to downtown office to airport to suburban heliport might have considerable timesaving appeal. Up to now, helicopters, in addition to being too costly and too small, have been too slow.

This year Bell, Hiller, and Hughes are bringing out five-place corporate and utility versions of their turbine-powered military *LOH* machines. The Hiller FH-1100 and the Bell Jetranger have a basic price tag of $85,000. (Extras will raise it $5000 or more.) Hughes will have two models, a utility version (passengers in the back sit on the floor) for $75,800 and a deluxe model for $78,800.

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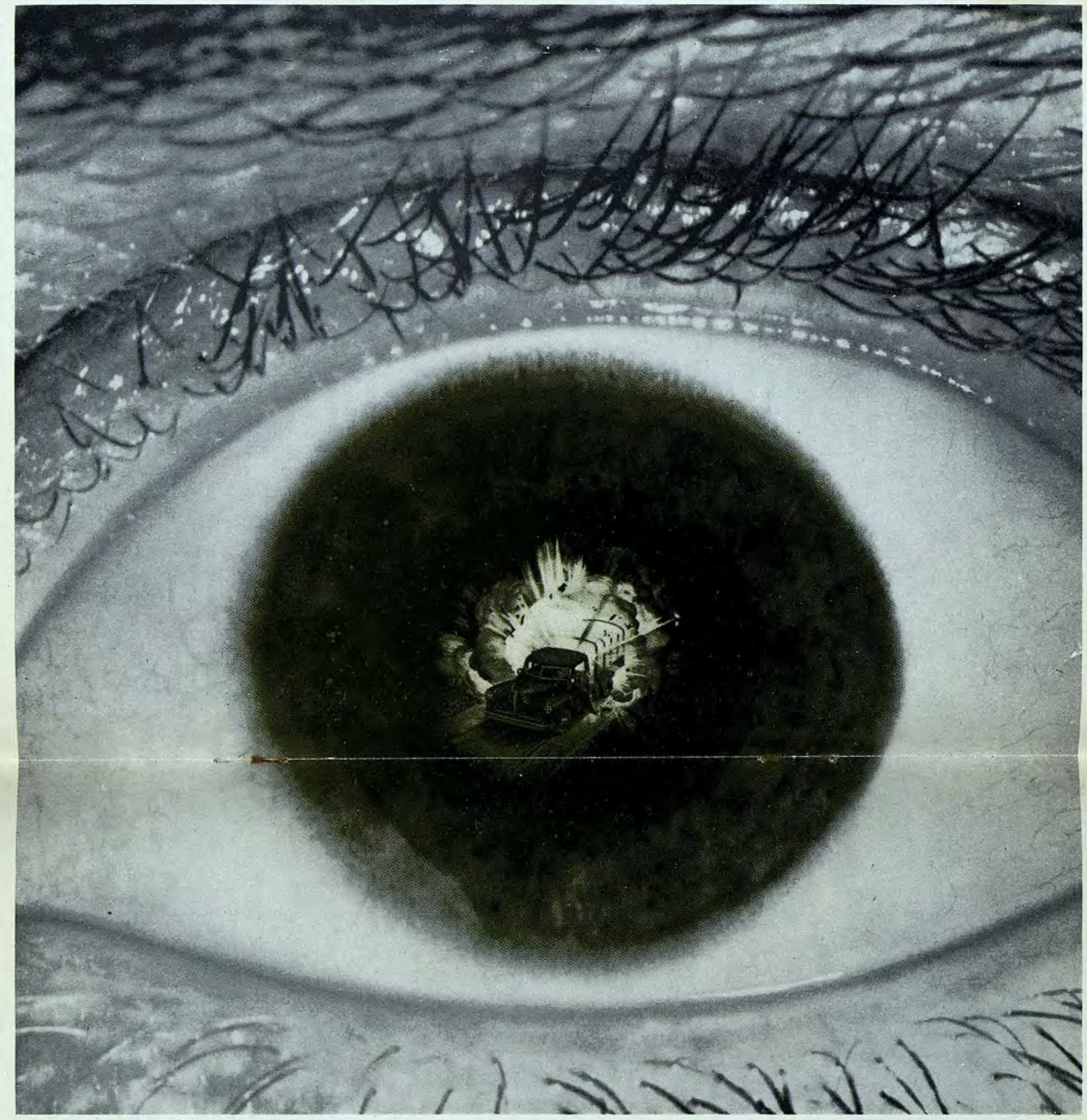

High Eye Cue

A hands-off, automatic fire control system based on a "see-it-destroy-it" concept has been developed and field tested by Sperry Utah Company. Called Simplified Fire Control System (SFCS), it is directed entirely by normal pilot or gunner visual acquisition, and is particularly suited to helicopters and COIN aircraft. Key to SFCS is the sight reticle which mounts on a *standard* flight helmet. Electromechanical linkage between the helmet and the airframe resolves the sight line which, when combined with inputs of aircraft speed, muzzle velocity and target range, brings the weapons system to bear upon whatever target the pilot or gunner looks at. The SFCS is compatible with existing armament systems such as the 7.62-mm machine gun and the 40-mm grenade launcher and can be quickly adapted to additions in ordnance inventory.

For fire control systems with a HIGH EYE CUE, contact Sperry.

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BIG WHIRL/Continued

For the economy-minded, Brantly is introducing a five-place ship for $54,000, but this one is piston-powered, slower, and less comfortable. The three turbine-powered aircraft are a marked improvement over older models; operating costs are about one-half of what they have been in smaller, piston-engine helicopters.

Despite such price tags, the three companies expect that the turbine-powered machines will take over as much as 80 percent of the entire small-helicopter market. While they expect that such craft will be used for a variety of jobs, some of their fondest hopes are pinned on corporations. Hiller's marketing director, Frederick Martin Jr., for example, estimates that 1,500 of the LOH-type helicopters can be sold between now and 1969, half of them for executive transportation. Like his competitors, Martin thinks he can convince executives that, on a parking-lot to parking-lot basis, a 150-mph helicopter is the fastest way to travel.

Hiller will roll out its first FH-1100 this month, produce eighty-two in the rest of the year, and another 144 in 1967. So far, it has a buyer's deposit on two-thirds of the 1966-67 production, including one from a Texan who bought two, a His and a Hers. Bell and Hughes say they will also deliver their machines this year, but both are likely to find it difficult to divert their attention from military production.

Twin Engine Safety

The big question is whether any company is really going to sell as many business helicopters as it expects to. As a safety precaution, a number of corporations refuse to allow senior executives to fly in single-engine aircraft. It is true that the helicopter is safer than the single-engine airplane, but Sikorsky officials, who are considering selling a twin-engine, French-design helicopter as an executive aircraft, believe the corporate market can't be opened up with a single-engine machine. Kaman Aircraft, which owns a subsidiary that sells conventional executive airplanes including the Lear Jet, has come to the same conclusion.

Hiller is now embarking on a $6-million-plus project to get a completely new, twin-engine corporate helicopter on the market by 1969. It will be a compound helicopter of some sort with a cruising speed of around 175 mph. But Hiller executives admit that it will be priced at somewhere over $150,000. A larger, more comfortable twin-engine airplane can be purchased for half that price or less.

Nevertheless, the industry is crowded with men who believe fervently that the small helicopter has a commercial future both for business transportation and for use as a personal aircraft for well-to-do pilots. Charles Kaman says, "*There's going to be a market out there as soon as somebody comes up with an economic rotary-wing device, say a four-place vehicle in the price range of a Beech Bonanza.*" (A four-place, single-engine Bonanza sells for $28,750.) That expectation, Kaman believes, accounts for companies as different as Brantly and Hughes "*coming in and hanging on.*" But he has been around long enough to temper his prediction. "*Maybe,*" he adds with a touch of regret for faded youthful dreams, "*it isn't going to happen.*"

Buses In The Air

Such companies as Hughes, Lockheed, and Boeing are also coming in and hanging on in hopes that helicopters will someday be used to transport large masses of people. So far, experiments with helicopter airlines haven't been very successful. Helicopter operators have been carrying passengers to the New York, Chicago, and Los Angeles airports since the early Fifties. In 1960 a similar operation began in San Francisco. All of these companies, except for Chicago Airways, have had a steady growth in traffic, but none of them has made a penny in profit on passenger revenues.

Furthermore, with their current equipment – twin-turbine helicopters seating twenty-four to twenty-eight passengers – it is unlikely that they ever will. Costs are higher than customers are willing to pay.

Boeing Vertol 107 lands at heliport atop New York's Pan American Building

The operators have found that the ticket price can be only slightly higher than taxi fare for the same trip. Says Robert Cummings, president of New York Airways, about the price of a helicopter ride from the top of New York's Pan American Building to Kennedy Airport, "*The $7 fare isn't related to cost, it's related to public acceptance.*"

From 1954 to last year the Los Angeles, Chicago, and New York airways losses were partly covered by a federal subsidy. In all, it totaled $51,100,000 and in recent years was roughly equal to the carriers' annual ticket revenues. When the subsidy was dropped last December, Chicago Helicopter Airways suspended passenger operations. The operators in Los Angeles and New York, as well as in San Francisco, have stayed in business with help from several major airlines, which hope that helicopters might be one way to solve the frustrating problem of getting to the airport.

Under the right conditions, the airport feeder lines might be able to compete profitably with taxis (though not with airport buses) by flying sixty-passenger commercial versions of Boeing's *Chinook* or Sikorsky's *CH-53A*. These would cost about $2 million each and would have to be kept flying on a heavy schedule to spread out indirect operating costs including depreciation, and to provide the frequency of service necessary to attract traffic. Few, if any, heliports would generate sufficiently heavy traffic of affluent passengers for such a schedule.

As a result, the potential market doesn't seem large enough for the manufacturers to recover the cost of converting the aircraft. Boeing for one would seem to have little faith in the short-term prospects for airline feeder operations. Even before its suburban Philadelphia plant filled up with military orders, it gave a Japanese firm, Kawasaki Aircraft, rights to build and sell Vertol's only commercial helicopter anywhere in the world, including the U.S.

Downtown To Downtown

However, Boeing and its competitors believe that helicopters could compete profitably in intercity transportation over distances of roughly 50 to 300 miles. The industry argues cogently that many travelers who now use ground transportation for such trips would quickly take to the air if they could get directly from downtown to downtown.

A good many problems will have to be solved before this idea becomes a reality. The helicopter operator will have to overcome objections to the noise and potential hazards of a downtown heliport. A large area of expensive land will have to be acquired if more than one or two aircraft are going to be operated at the same time. And some major changes will be needed in the airways control system to handle heavy helicopter traffic, especially under instrument conditions.

The immediate problem is that no helicopter in production offers the necessary combination of speed and size. Size is no

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BIG WHIRL/Continued

real difficulty: 100-passenger helicopters can be built if anybody wants to pay for them. But speed is. Just how fast a helicopter bus must travel depends partly on the mileage between stops along its route. At distances between fifty and 300 miles, it could compete with other forms of transportation in terms of elapsed time if it cruised at about 200 mph. But the airlines suspect that twice that speed will be needed to provide frequent schedules and spread out indirect costs with a high number of daily round trips.

Even a compound helicopter can't cruise at 400 mph; the rotor system creates too much drag. And while engineers have worked out on paper a number of ways to convert helicopters into 400-mph airplanes in midair, such schemes add costly weight and machinery.

V/STOL Designs

A number of designers have concluded that the answer to intercity transportation is not a helicopter at all, but rather some other form of vertical-takeoff aircraft. In the past fifteen years over $380 million in government funds and a good deal of private capital have been spent trying to develop a vertical and short takeoff or landing airplane. Most so-called V/STOL designs can fly straight up, but they can carry a bigger payload if they use a short runway. And some planners believe that the area needed for a heavily used downtown heliport will be so large that short takeoff airplanes are more feasible than vertical-takeoff aircraft.

The biggest V/STOL program under way today is Ling-Temco-Vought's tilt-wing transport, the XC-142A. Dr. Walter J. Hesse, who is in charge of the program for Vought, says he can have a commercial version flying within four to six years if he can get a military production order that would help cover additional development costs. But Washington already has $128 million in research and development funds in the XC-142A program and not everybody in the Pentagon is sold on the airplane or convinced of the need for it. Colonel Delbert Bristol, Deputy Chief of Army Aviation, explains, "*The industry projects the advent of the V/STOL faster than we do, but then we are closer to the problem of getting the money.*"

Even outside of Washington, there is the belief that too many penalties in weight, complexity, and cost are involved in crossing the helicopter with the airplane. No less an authority than Igor Sikorsky says that V/STOL aircraft will have only limited military uses. Elsewhere in the industry, however, engineers and executives alike are banking on the hope that some sort of high-speed helicopter or V/STOL transport will be in military and civilian service by sometime in the Seventies.

A Grand Battle Foreseen

For the helicopter manufacturers the big question is not what this anticipated craft will look like, but who will build it. As soon as an economic transport looks feasible, the already overcrowded industry is going to be joined in battle by such companies as L-T-V and most, if not all, of the major airframe producers. Hughes and Lockheed have already proved that lack of experience won't deter anybody if there is even an outside chance of making money.

Since almost all of the helicopter producers are now divisions of much larger companies, the industry will probably be financially able to give even the biggest outsider an argument. That being the case, the industry may be headed toward a grand battle that could parallel the struggle for dominance in the jet-transport market.

"*At some point in the Seventies,*" one helicopter executive predicts, "*somebody is going to bet all the marbles on a major project, say a tilt-wing V/STOL, and another company is going to take home the business with something else, say a compound helicopter. Like the transport battle, there's going to be a big winner like Boeing and a big loser like Convair.*" True to the helicopter industry's code of optimism, he adds, "*It's too bad it's going to happen to the other guy.*"

The dramatic role played by Army aviation in the guerrilla-infested deltas, swamps and highlands of South Vietnam is known by Americans, young and old alike. In this drama, the helicopter plays the lead. The scene varies from day to day, but it is always focused somewhere in the combat area and depicts hundreds of whirling rotor blades.

There are *other* actors and *other* locales, seldom projected into the spotlight of news media. The actions of these less publicized players often determine the success of the combat committed units. To meet such a group of players, it is necessary to travel to military installations within the Continental United States.

Unique Group

At Fort Benning, one comes in contact with a "one-of-its-kind" organization – the 10th Aviation Group. Located at the "*Home of the Infantry*", commanded by an Artillery Officer, and comprised of representatives from each of the Army's arms and branches of service, this unique group rates a place in any selection of an "All-Army Aviation" Team!

For an introduction to the Group at Fort Benning, take a look at any map of the Republic of South Vietnam. Visualize Army Aviation Companies and Battalions strategically located at points along its North-South axis from Quang Tri on the North to the point of the Delta area on the South.

Many of these units were not in Vietnam prior to September, 1965. In fact, several of them did not exist then. Since that date, a large number of these units were activated, organized, equipped, trained, and deployed

By

HORACE G. COOKE

Customer Requirements

Boeing Vertol Division

by the 10th Aviation Group, either totally or in part!

If you study the Army's Vietnam deployments closely, you'll find that a variety of helicopters and fixed wing aircraft are represented among the players. This "Team" at Fort Benning has firmly established itself as the *training base* for Army aviation units to be deployed on a world wide, when and where needed, basis.

Origin

The 10th Aviation Group came into being in early 1963 as the 10th Air Transport Brigade. Conceptually, such a unit is intended to support each Air Assault Division brought into the force structure.

With the Army's *Test and Evaluation of Air Mobility (Project TEAM)* the 10th Air Transport Brigade was activated to provide wholesale and retail delivery of daily supply and equipment requirements to the 11th Air Assault Division.

Initially, the equipment in this Brigade was weighted toward fixed wing aircraft, the Brigade being organized with an Aviation Battalion (FW) with five organic Aviation Companies, equipped with CV-2 *Caribous*, and a Helicopter Battalion with two CH-47A *Chinooks* and one CH-54 *Aerial Crane* Companies.

The story of *Project TEAM* is now history, with the legendary 1st Cavalry Division

WILL DO/Continued

(AM) in Southeast Asia as visual proof that airmobile units are formidable combat forces. The 10th Air Transport Brigade contributed immeasurably to this success story.

When the decision to deploy the 1st Cavalry Division (AM) was made, a parallel decision to convert the 10th Air Transport Brigade into a *training base*, designated as the 10th Aviation Group, was implemented. *Col. J. Elmore Swenson* was designated as the newly formulated Group's Commander. He was simultaneously faced with the overwhelming tasks of providing equipment, personnel, and support to the 1st Cavalry and of immediately accomplishing the unit deployments required to support other Army elements in Southeast Asia.

When the 1st Cavalry departed Fort Benning, only the oldest aircraft of the two units were left to provide the *training base*. A large percentage of the experienced personnel who had progressed through *Project TEAM* left with the deployed division.

An Overnight Growth

Overnight, newly-assigned commanders were expected to activate and to put into action the organic companies that were necessary to train the follow-on companies that would be deployed. With critical shortages of people, equipment, and experience, a highly proficient 10th Aviation Group emerged quickly. This unit then proved itself as evidenced by the number and variety of Aviation Companies it has activated, organized, equipped, trained, and deployed while retaining a posture to meet its primary contingency mission.

The 10th Aviation Group has two subordinate Battalion Headquarters – the 37th Aviation Battalion (Provisional) with organic UH-1 *Iroquois* and CH-47 *Chinook* companies, an Air Traffic Control Company, and a Transportation Corps Maintenance Company; and the 44th Aviation Battalion (Provisional) with its organic UH-1 *Iroquois* Company. Each Battalion has a number of Aviation Companies in training.

The primary mission of the 10th Aviation Group is to provide command, control, and staff supervision of attached aviation battalions and separate companies *to support contingency plans as directed by higher headquarters*. Other missions are the:

- Reorganization and deployment of attached fixed wing aviation companies.
- Individual training of air traffic controllers.
- Conduct of aviator transition training in the UH-1 helicopter.
- Activation, organization, equipping, training, and deployment of UH-1 Airmobile Companies (Lt).
- Activation, organization, equipping, training and deployment of CH-47 Aviation Companies (Med Hel).

The Gunslingers

Attached to the 10th Aviation Group is a Special Chinook Detachment, equipped with armed and armored CH-47A helicopters. This unit is undergoing evaluation and training to develop tactics and techniques of employment in event it is required to meet a contingency or deployment mission.

Again, this is a "*one-of-its-kind*" organization. The assigned *Chinooks* carry a variety of weapon systems with a potential stand-off capability not now available in deployed armed helicopters. Armor plating provides protection to pilot and copilot and to vital components of the aircraft.

Members of this unit consider themselves to be what the name implies – *SPECIAL!* Like other members of the parent organization, their morale is high and is reflected in the calling cards of the officer personnel. These cards read: '*Have guns. Will travel!*'

The conduct of individual training of air traffic controllers is also unique in not being available in any Army Service School. Wherever Army aviation units are deployed, there is a requirement to provide air traffic control, regulation, and identification in the forward areas and enroute air traffic control of Army aircraft under instrument conditions. The 10th Aviation Group's 72nd Air Traffic Control Company is the single Army

agency qualified to train personnel to meet this vital need.

Unit and individual training conducted at Fort Benning is realistic. The various commanders intend that units which they train will be deployed ready for combat. To meet this intention, they keep in close contact with the units which have already been deployed, and update the unit and individual training schedules in accordance with the inputs of those who are "*there*." This demands the most of the participants, and there are no 40-hour work weeks for instructors or students!

Group-Trained Units

Again, visualize Army aviation units strategically located along the North-South axis of South Vietnam. Of these, the 10th Aviation Group recently deployed 21 units to Southeast Asia; the 478th Aviation Company equipped with the CH-54 *Aerial Crane;* the 10th and 11th Aviation Battalion Headquarters; the 48th, 68th, 161st, 162nd, 170th, 173rd, 174th, 175th, 281st, and 282nd Airmobile Companies equipped with the UH-1 *Iroquois;* and the 147th, 178th, and 179th Aviation Companies using the CH-47A *Chinook.*

The 17th, 57th, 134th, and 135th Aviation Companies equipped with the CV-2 *Caribou;* and the 125th ATRI Company which provides air traffic control throughout South Vietnam were also Group-trained prior to deployment.

Over 2,100 individuals are involved in the 10th Aviation Group's activities. These individuals represent every degree of skill and experience required by the aviators, crewmen, mechanics, and supporting personnel who man combat aviation units. In their stateside locale, they are instructors and students, but they have a common mission – preparation for deployment.

Battle Is Payoff!

Nowhere will you find higher esprit-de-corps than exists among the members of this organization. This *esprit-de-corps* becomes *courage* in Southeast Asia, an unseen but factual link between the Army aviation units in the Republic of Vietnam and the parent *training base* at Fort Benning, Georgia.

Courage, morale, and esprit-de-corps are qualities of the Army's aviation personnel which result in daily reports of success on the battlefields. Another manner of expressing these same qualities is summarized on the distinctive unit insignia worn proudly by Colonel Swenson and each member of his Aviation command: "*Will do.*"

Seventh Army Aviation Unit Supports NATO Exercise Above Arctic Circle

NURNBERG, GERMANY (Exclusive) – On 28 March the first flight of the 90th Aviation Company arrived at their home station in Nurnberg after flying a 2,500-mile round trip to participate in *Exercise Winter Express* in northern Norway. Participation in the exercise marked the first time the giant *Mojaves* had been utilized in a mass flight in the rugged terrain of Norway, 200 miles above the Arctic Circle.

Designed as a test for NATO troops, *Winter Express* proved to be a test of the 90th's men and equipment. Troop and cargo lifts and simulated mass combat assault missions were all carried out in sub-zero temperatures, with most landing sites being covered with up to six feet of blowing snow. Some landings were made on sheer pinnacles up to 5,000 feet.

Upon completion of the mission, the unit of the 18th Aviation Battalion was awarded a plaque by the CO of *Brigade North,* the unit supported by this Seventh Army aviation unit. By-product: all crews had the opportunity to meet both the people and the military of other NATO nations, with all developing a respect and understanding for each other's way of life and methods of operations.

CWO David C. Sorrick

10TH AVIATION GROUP, FORT BENNING, GEORGIA

44th AVIATION BATTALION

LT. COL. FRANK L. SHAW
COMMANDING OFFICER

MAJOR KENNETH N. BLAKE
EXECUTIVE OFFICER

MAJOR GLENN M. EBAUGH
CO, 173RD AVIATION CO.

MAJOR ERNEST C. ELLIOT
CO, 175TH AVIATION CO.

37th AVIATION BATTALION

MAJOR ROY L. MILLER
COMMANDING OFFICER

MAJOR GEORGE W. ADAMSON
EXECUTIVE OFFICER

MAJOR ROBERT F. HENLEY
CO, 1ST AVIATION CO.

MAJOR GEORGE M. BELK
CO, 72ND AIR TRAFFIC CO.

MAJOR GERALD D. DYER
CO, 177TH AVIATION CO.

COL J. ELMORE SWENSON
COMMANDING OFFICER

LT. COL. L.C. ROBERTSON
DEP. COMMANDING OFFICER

LT. COL. JOSEPH M. SOLARI
EXECUTIVE OFFICER

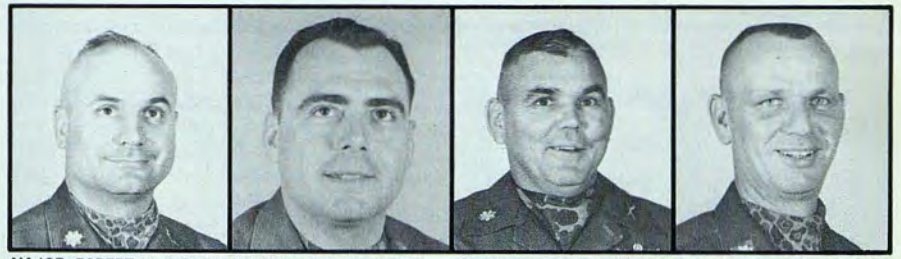
S/MAJ EUGENE R. GOLSTON
SERGEANT MAJOR

MAJOR CHARLES R. JONES
S1 OFFICER

MAJOR LONNIE T. HOWARD
S2 OFFICER

MAJOR WILLIAM M. JENKINS
S3 OFFICER

LT. COL. ROBERT C. MC COY
S4 OFFICER



MAJOR ROBERT W. SIEGERT
CO, 176TH AVIATION CO.

MAJOR JAY D. ROSSMAN
CO, 181ST AVIATION CO.
(DECEASED)

MAJOR EVERDUS H. HACKETT
CO, 281ST AVIATION CO.

MAJOR B. D. WATERMAN
CO, 282ND AVIATION CO.

MAJOR TURNER J. TRAPP
CO, 179TH AVIATION CO.

MAJOR THOMAS F. PERKINS
CO, 180TH AVIATION CO.

MAJOR KENNETH C. STANLEY
CO, 182ND AVIATION CO.

CAPT. ARTHUR J. POOLE
CO, 609TH TRANS CO.

CONCEPTS / Continued

In the case of *Heavy Lift Helicopters*, procurement of the CH-54 will continue to meet immediate requirements and effort will continue on the definition of an optimum heavy lift helicopter and component development.

With respect to *Weapons Helicopter*, procurement of the *Cobra* and development of the *AAFSS* will continue with the *Cobra* remaining in the inventory as a supplement to the capability of the *AAFSS*.

U-8 proven effective

No change in the *Utility Airplane* has resulted from the agreement. The Army has for many years used a variety of aircraft in meeting its requirements for utility aircraft in combat, combat support and logistic support units. Until recently, the plan has been to replace these aircrafts, the U-6, U-1, UH-34, UH-19, with the UH-1; however, the U-8, previously procured as a mission support aircraft for administrative missions, has proven to be a very effective aircraft in Vietnam for special operations and utility transport. This has indicated a continuing requirement for fixed wing aircraft for utility missions. Authority for Army procurement of a new utility aircraft having slightly greater capability than the U-8 and better short field performance has been granted by the Secretary of Defense.

MODERN FARMER

In addition, the Army is making expanded use of the older, obsolescent C-45 and C-47 type aircraft for support missions in the CONUS. The Army will continue to obtain the most satisfactory aircraft available in meeting its utility support requirements to include fixed wing. These aircraft will be obtained by off-the-shelf procurement and employed on the same basis as that of other services and civilian industry.

As to *Mission Support Aircraft (Administrative)*, no change is contemplated. The Army will continue to use the U-8 type aircraft to meet administrative mission support requirements. Aircraft of this type will be procured "off-the-shelf" and used on the same principle as followed by large corporations and the other Services in providing transport for senior staff officers and officials.

Expanded requirements

Gentlemen, I hope this brief treatment will serve to assure you that the Army is still in the flying business. Our need is greater than ever before. Our research and development program is ever expanding to seek new and effective areas of performing the Army mission. Our expanded procurement and production requirements generated by the needs expressed by commanders in Southeast Asia demonstrate their high regard for the responsiveness of aviation support. The accomplishments of our crews in Vietnam are legion and a highlight of each day's news reports.

All of us here – so closely associated in new aviation developments – are privileged as few are, to see the fulfillment of many years work. At the same time our charter for the future is clear. The military-industry team must continue to link arms in the solution of our mutual problems and goals.

We have accomplished much – but it is only the beginning – there are great tasks ahead.

THE MONTH'S TAKEOFFS

LT. COLONELS

BARNES, Harold E.,
BORLAND, R.E.R.
BURRUS, Robert H.
COLOZZI, Carl A.
GRANDELLI, Charles M.
KUSEWITT, John B., Jr.
PRATER, Robert M.
PRUETT, Lloyd O.
SARGEANT, Edward W.
SCHMIDT, William R.
SINCLAIR, Christopher
WATSON, William R.

MAJORS

BENNETT, Willard M.
BLAIR, John M.
BLANCHARD, Howard B.
BOLING, Donald E.
BOND, James A.
BOWDOIN, Arthur C.
BOYLE, Dennis M.
BROWN, Edward C.
BULKLEY, Morton C.
CAYO, Alan B.
COPELAND, Francis A.
CORY, Rennie M.
DAVIS, Lauren S.
DEAN, Wesley A.
DOIRON, Nicholas H.
DOTSON, Larry D.
DOYLE, John P.
DUCKWORTH, Richard H.
FORD, James W.
GORDON, Marvin E.
HERBOLD, Robert A.
HOFFMAN, Glenn F.
JOHNSTON, John A.
JONES, Robert A.
KALLESTAD, Richard D.
KELLEY, Henry E.
KNIGHT, Bobby M.
KNIGHT, Lowell R.
LEWIS, Donald J.
LOCKWOOD, Bill G.
LUMPKINS, William J., Jr.
MARTIN, Francis B.
McKENNEY, William R.
MIKULA, Joseph G.
MILLER, Simon L., Jr.
MURPHY, Richard R.
NOEL, Albert W.
O'CONNOR, Thomas W.
OGBURN, John R.
PICK, Rudolph
PIERCE, Samuel M.
REINHARDT, John A.
ROBISON, Paul B.
ROBY, Robert L.
SANDERS, Drexel E.
SCANLAN, William H.
SCHWARZ, Henry E.
SCOGGINS, John
SHERIDAN, Milton C.
SISK, Isaac R.
STEVENS, Francis J.
THOMAS, Michael R.
THOMPSON, Raymond M.
TYSON, Robert M., Jr.
VANDIVER, Gilmer L.
WARD, Felker W., Jr.
WEDDINGTON, David H.
WILSON, Walter C., Jr.
WRIGHT, Johnie, Jr.

CAPTAINS

BERNSTEIN, Donald
BOUDREAU, Arthur F.
BRADY, Patrick H.
BRENNAN, Kenneth J., Jr.
BRYAN, Curtis
BUDD, Alexander S., Jr.

CAPTAINS

CALLENDER, William E.

CARROLL, John E.

CASEY, Thomas D.

CASS, Stanley D.

CHAUVIN, Charles E.

CLARK, Davis

CLARK, Dudley M.

CLARK, Shannon D.

CYR, Arthur R., Jr.

DANIEL, Harold E.

DANILOFF, Frederick D.

DASSONVILLE, Curtis R.

DUSTIN, George M.

EMANUEL, Peter J.

FERNALD, John P.

FREEMAN, Charles G.

GOINS, Allen T.

GOLDBERG, Edward B.

GOODWIN, George W.

GORSUCH, George W., Jr.

HATFIELD, Charles F.

HEDRICK, Miles C.

HYERS, James E.

CAPTAINS

KOLLHOFF, Ronald K.

KRAMER, Bryce R.

LACY, Joseph A.

LAWSON, Edward K., III

LOGAN, David W.

LUDLOW, Godfrey

LYMAN, Edward V.

MAGUIRE, John H.

MARKS, Max G.

MAXSON, Ronald G.

McLEOD, James M., Jr.

McNAMEE, Vernon D.

MEIHOFER, Albert E.

MOORE, Bobby L.

MULVANEY, Merle L.

NEWSOME, Joseph D.

NICHOLS, Noel Q.

NIELSEN, Donald A.

OHLENBERGER, Cliff C.

O'NEAL, William F.

OSBORN, Michael F.

PALMERTREE, Tommy R.

PAUL, Gerald D.

POPE, John L.

CAPTAINS

POWERS, Davies R.

PURVIS, Marida R.

RAMEY, Harold M.

RODRIGUEZ, Albert F.

RUX, William A., II

SCOTT, Engle W.

SEARCY, James W.

SEELEY, John S.

SHAW, Frank G.

SILVA, Warren R.

SINES, Kenneth A.

SMITH, Horace M.

SMITH, Lewis A.

SMITH, Richard L.

SMITH, Robert H.

SWINDELL, Brennon R.

TABB, Billy

THACKER, James H.

THURMOND, James F.

VAN REGENMORTER, R.

VAUGHN, John P.

WAGNER, Ellsworth C.

WALKER, Laurence H.

WEBER, Ralph P.

CAPTAINS

WILLIAMS, Charles E.

WILSON, Clyde P.

WILSON, Donald C.

WRAY, Donald P.

ZIEGLER, Gerald L.

ZIPPERER, Frank E.

LIEUTENANTS

BAVETZ, Richard A.

BLUME, Milton D.

BODEEN, Jerrie W.

BRANSTUDER, Phillip V.

067

CLARY, Jim H.

CROSSIMIER, David A., Jr.

DILLARD, Gale P.

DREILING, Gerard F.

ELLIS, John R., Jr.

a.

ELLIS, Kent G.

FRANKLIN, Robert B., Jr.

FUDGE, Gerald W.

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HOAGLAND, John M.

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MARCY, John

McAULIFFE, Albert J.

McBRIDE, Fitz R.B.

MOUW, John D.

O'DONNELL, Craig W.

PAGE, Larry R.

PAPIER, John L.

RAGSDALE, John W.

RALSTON, Thomas L.

RIELAGE, Martin J.

SCHODOWSKI, Leonard M.

WALTHALL, Phillip D.

WHITE, Phillip D.

CWO'S

ANORGA, Jose

BANASZAK, Richard Z.

BROWN, Aldon E.

BRUCE, Bobby G.

exas

BRYANT, Harry G.

CWO'S

BURGESS, William C.

CLEARY, William H.

CLOUD, Robert D.

COWAN, Sidney C.

EAKINS, James R.

GEARAN, Leonard H.

HARBOLD, Edward E., Jr.

JOHNSON, George T.

JOHNSON, Robert L.

JONES, Clarence T.

KETCHERSID, Foy R.

KING, Thomas J.

LORE, Jack R.

McNAIR, Charles T.

METZ, Paul E.

MILLER, Richard D.

MOATS, Clode J.

NELSON, Huey R.

NIAMTU, John E.

NORTON, Henry C.

OATES, Jene R.

POTTER, Harvey B.

PULLEN, Dennis L.

RUTH, Francis J.

WO'S

BAKER, Roger A.

BARTA, Frank J.

BECKER, John J., Jr.

BOND, Charles W.

BOWDEN, James F., Jr.

BOWEN, Thomas E.

BOYCE, Glenn T.

BURKE, William J.

CARTER, Willard T.

CURRY, Alexander E., Jr.

DAVIDSON, Jon R.

DILLBECK, William R.

DOADES, Michael S.

DUNDAS, Michael C.

EGONIS, Clement T.

ELLISON, Wayne E.

FRISCHKNECHT, Ray

GARRETT, Danny

HAFNER, Stephen F.

LOHMAN, Douglas J.

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MULLIS, Larry L.

MUNDT, Vernon J.

NASH, Stanley G.

WO'S

RUNDLETT, George W.

SCARPACE, Gerald A.

SCHWEIKERT, Ronald W.

SHARP, Wavie C.

THOMPSON, Howard E.

WARD, Thomas J.

WATSON, Eddie L.

WEST, Jerry L.

WILKERSON, Ronald U.

MSGTS

MANNING, Cyril G.

ASSOCIATES

FUTRELL, Mrs. Brenda B.

MARCUS, Mr. John E.

PRATT, Mr. Perry W.

WILLIAMS, Mr. Edward J.

WILSON, Mr. Bryce

WRIGHT, Mrs. Mildarene

RETIRED

BOWLING, Buckner, SMaj

BROWN, Jesse C., LCol

HAYNES, Thomas E., Col

RAWLS, Robert M., Col

SHEMWELL, Victor B, Col

AWARDS AND Decorations


SILVER STAR

SILVER STAR

Bruce, Ronald R., Sp4
Burroughs, Harland, Maj
Dean, John W., Capt
Miller, Carl S., Jr., Capt*
Murphy, Louis F., WO

LEGION OF MERIT

Hill, James F., Col
Honour, Charles M., LCol*
Lund, Sigurd A., Maj, 2

DISTINGUISHED FLYING CROSS

Adams, Joseph G., CWO
Bartholomew, Roger J, Maj
Bates, Bobby L., Lt
Baughman, Larry J., Maj
Bills, Arthur D., Capt
Booth, James W., Maj
Bowen, Thomas E., WO
Bustamante, Eulalio, Sp4
Covington, William R., Lt
Dowling, Robert M., CWO*
Filipowski, Robert J, CWO
Ford, Larry K., WO
Foreman, Richard G., Capt
Fudge, Eugene E., Capt
Griffin, John R., Capt
Hall, James A., Capt
Hamilton, Thomas R., Capt
Harrison, Howard W, Capt
Haswell, Edward A., Capt
Hefford, Robert A., Capt
Henderson, Lewis J., Maj
Honda, Gilbert S., CWO
Honour, Charles M., LCol*
Horsley, Tip A., Lt
Hutto, Curtis W., CWO
Irvin, Ralph D., Maj
Johnson, Howard R., Maj
Jones, Glen W., Maj
Kenny, Edward T., Lt
Kopecky, Robert J., Capt
Krofchek, James M., Capt
Lesnick, George B., CWO
Logan, David W., Capt
Maddox, William J., LCol
Mahone, Nelson A., LCol
Marcinkowski, Garrett, Lt
Miller, Carl S, Jr, Capt, 1*
Miller, Robin K., Capt
Mills, C.V., CWO
Moffett, Joseph U., Capt
Molinelli, Robert F., Capt
Moody, Jim E., Lt.
Moorehouse, Dean T., WO
Murphy, Louis F., WO
Nims, Richard E., WO
Ortolano, Alexander J., Lt
Robertson, Charles D,CWO
Romer, Michael M., Lt
Rosinski, Stanley, Sp5

DISTINGUISHED FLYING CROSS

Scott, James J., III, Capt,1
Scott, Richard H., Maj
Simpson, John P., Sp5
Spain, Hugh F., Sp4*
Spruiell, Jerry B., Capt
Stanko, John F., III, Lt
Steele, Homer E., Lt
Stimac, Elmer V., CWO
Sullivan, Donald E., WO
Vaughters, Kenneth R, Capt
Vincent, Samuel M., Maj
Webber, Claude A., CWO
Werner, Charles E., Lt
Wotkyns, Anthony L., CWO

SOLDIER'S MEDAL

Davis, Julius E., Sp4
Haswell, Edward A., Capt
Pepe, Michael J., Capt
Rhodes, Cecil, Sp4
Rockwood, Alden F., SFC

BRONZE STAR FOR VALOR

Avers, Michael P., PFC
Barbre, Ronald R., Sgt
Beale, Gary M., Sp5
Buetow, Roger E., PFC
Dowling, Robert M, CWO*
Esposito, Jeffery H., PFC
Hamilton, Elmer R., Sp5
Hughes, William, Sp4
Kelly, Clifford W., Sp5
Miller, Carl W., Sp4
Ogden, Leigh M., Capt
Ogle, Gary D., WOC
Reel, Roger L., Sp5
Richards, James L., Sp4
Rushin, Johnnie L., Jr., Sp5
Spaulding, Thomas L., Sp5
Stockham, Emory R., Sp5
Swick, Fred, Sp4
Terry, Frederick G., Capt
Van Doren, James, Sp4

BRONZE STAR

Brittain, Cecil D., SFC
Dorsey, James J., Capt
Grasmeder, John M., Capt
Haseman, Donald G., Maj
Johnson, James W., Maj
Kincheloe, Samuel E., Capt
Merritt, Virgil E., CWO
Miller, Carl S., Jr., Capt*
Moores, Richard K., CWO
Murphy, Louis F., CWO
Myers, John T., WO
Myers, Marvin O., Capt
Ranney, Thomas A., Capt
Shields, William B., CWO

AIR MEDAL FOR VALOR

Anderson, Morris D., Capt
Baker, David L., WO
Beanziger, Wayne A., WO
Begay, Donald E., WO
Bender Lawrence, CWO
Benjamin, Richard, WO
Billman, Barry R., WO
Bladel, John P., WO
Boswell, Leonard L., Capt
Bowen, Gail O., Lt
Branch, John L., CWO
Branstuder, Phillip V., Lt
Brian, William L., III, Lt
Brooks, Ivan F., CWO
Campbell, Paul M., Capt
Chamberlain, Wm. C., Maj
Childers, Jerry W., Lt
Church, James K., CWO
Copeland, William L., WO
Cowen, Robert H., WO
Cox, Leonard A., CWO
Crotty, Howard R., CWO
Delany, Daniel J., Capt
De Loach, William W., Maj
Densley, Rueben L., CWO
Dodd, Calvin H., Capt
Dutton, Wayne E., Maj
Farnham, Donald W., Capt
Fraker, William W., Capt
Freeman, Ronald R., WO
Gilbert, Ronald L., WO
Gilmer, Charles T., Capt
Harris, John M., III, Capt
Hester, Thomas L., Capt
Hitch, Willard M., WO
Holzheuser, Henry R., Lt
Hunter, John D., WO
Ireland, Gerald E., WO
Jochens, Rodney L., WO
Johnson, Raymond F., Capt
Kammerer, Larry E., WO
Kash, Steven N., Maj
Kingman, Dan C., Jr., Lt
Leonard, Jay T., Lt
Leyva, Ramon D., Capt
Logan, David W., Lt
Lorimer, David S., CWO
Lovell, Buddy, Capt
Lyman, Scott T., Capt
Lynch, John R., WO
McKenzie, Colin W., Maj
Miklinski, Anthony R., Capt
Miller, Carl S., Jr., Capt*
Miller, Dion H., WO
Mills, C.V., CWO
Milner, Thomas, Lt
Mizell, Louis L., Maj
Moffett, Joseph U., Capt
Molinelli, Robert F., Capt
Morgan, Glenn E., Capt
Nippert, Wayne N., WO

*Posthumous Award

AIR MEDAL FOR VALOR

O'Bray, Preston E., CWO
O'Grady, George L., Capt
O'Quinn, Edwin B., WO
Ovnic, Frank A., WO
Page, Larry R., Lt
Pelfrey, Kenneth R., Lt
Pettit, Phillip D., CWO
Pittman, Thurman M., Capt
Quattlebaum, Harold, WO
Regan, Daniel, CWO
Reisinger, Edward A, CWO
Riches, Jerry W., Lt
Ritenour, Harold R., CWO
Roberts, Milton R., Capt
Rosenberger, Fred K., Lt
Runk, Adam E., Lt
Saint, Jack F., WO
Sandlin, Ray L., Capt
Schoolcraft, R.J., WO
Schultz, Alan J., WO
Scott, Richard H., Maj
Smiley, Albert B., CWO
Spencer, Bobbie J., Capt
Stanko, John F., III, Lt
Stone, Charles R., WO
Suddaby, Arlen R., Maj
Taylor, Billy W., Capt
Terry, Frederick G., Capt
Thornton, William J., Sp5
Tisdale, Basil D., WO
Turner, Edward G., WO
Watson, Harry L., Jr., WO
Webb, Richard G., Capt
Whitener, John R., CWO
Whitney, James I., Lt
Whitworth, Wm. E., Capt
Wilson, William C., Lt
Wright, Robert K., Capt
Wood, Robert T., Lt
Woods, Robert, Lt

COMMENDATION MEDAL FOR VALOR

Black, Norman E., Sp5
Chaisson, Errol J., Sp5
Cody, Robert L., LCol
Hafner, Frank F., Sp4
Huckell, Thomas W., PFC
Hutto, Curtis W., CWO
Lumbis, Joseph M., Sp5
Minton, Leslie, Sp4
Monk, Bernice E., Sp5
Vaughn, Robert H., Jr., Sp5
Walling, Edward B., Sp4
Young, Ray A., Capt

OBITUARIES

GERALD V. BELCHER

First Lieutenant Gerald V. Belcher, an Army Aviator assigned to the 18th Transportation Battalion, Germany, sustained fatal injuries in the crash of his CH-34 helicopter. The fatal accident took place on March 25, 1966. He is survived by his widow, Mrs. Beverly G. Belcher, [redacted]

BURTON A. BLANTON

Captain Burton A. Blanton, an Army Aviator on assignment to the 1st Cavalry Division, Vietnam, died as a result of injuries received in the crash of his UH-1D helicopter during the conduct of a combat mission on March 30, 1966. He is survived by his widow, Mrs. Myra P. Blanton of [redacted].

JEROME B. FELDT

Lieutenant Colonel Jerome B. Feldt, Ret., died as a result of injuries received in a civilian helicopter accident that occurred October 15, 1965. Well known throughout Army aviation circles, Feldt held a variety of command and staff positions prior to his retirement in October, 1964. He is survived by his widow, Mrs. Libby Feldt and five children, of [redacted]

TYRONE W. HISEY

Warrant Officer Tyrone W. Hisey, an Army Aviator assigned to the 1st Cavalry Division, Vietnam, sustained fatal injuries in the crash of his UH-1D helicopter. The fatal accident took place during the conduct of a combat mission on March 30, 1966. He is survived by his mother, Mrs. Ann M. Sims, [redacted]

IRMA INSKEEP

Mrs. Irma Inskeep, wife of the late Col. John L. Inskeep, Ret., died April 21 at Luke Air Force Base Hospital near Phoenix, Ariz., following a short illness. She is survived by a son, Stephen, of Phoenix, and a daughter, Mrs. Marsha Hemsley of Missouri.

CLYDE L. NORVELLE, JR.

Warrant Officer Clyde L. Norvelle, Jr., an Army Aviator on assignment to the 1st Cavalry Division, Vietnam, died as a result of injuries received in the crash of his UH-1D helicopter during the conduct of a combat mission on March 30, 1966. He is survived by his widow, Mrs. Carol A. Norvelle of [redacted].

JAY D. ROSSMAN

Major Jay D. Rossman, on assignment as the Commanding Officer, 181st Aviation Company, Fort Benning, Ga., and his wife both died as the result of injuries received in an automobile accident near Lynchburg, Virginia. The accident occurred on March 26, 1966. They are survived by their son, Hubert, and daughter, Pauline, presently living in Cleveland, Ohio.

JOHN S. SABINE, IV

Captain John S. Sabine, IV, assigned to the 1st Cavalry Division, Vietnam, sustained fatal injuries when his UH-1D helicopter crashed during the conduct of a combat mission on March 30, 1966. He is survived by his widow, Mrs. Deidre C. Sabine, [redacted]

BEN W. STUTTS

Major Ben W. Stutts, on assignment with the U.S. Army Missile Support Command, Redstone Arsenal, Alabama, died as a result of injuries received in the crash of his U-9 aircraft. The accident occurred on April 27, 1966. He is survived by his widow, Mrs. Mary B. Stutts, [redacted]

LT. COL. JEROME B. FELDT

AWARDS AND Decorations

SILVER STAR

Miller, Robin K., Capt
Naylor, John P., PFC

LEGION OF MERIT

De Loach, William W., Maj

DISTINGUISHED FLYING CROSS

Benjamin, Richard D., WO
Bliven, David M., Capt
Colbert, Bill N., Capt
Cooper, Frederick E., Capt
Copeland, Francis A, Maj,1
Dillingham, John R., WO
Elliott, Tommie E., Lt
Foster, Loren N., CWO
Frick, Stanley J., Maj
Garza, David A., WO
Glenn, John F., Capt
Greaves, Walter L., WO
Green, John W., III, Capt
Hamilton, Thomas R., Capt
Kaplan, David G., WO
Logan, David W., Capt
Madsen, Ronald L., WO
Mathews, Robert E., Jr., Lt
Miller, Robin K., Capt, 1
Molinelli, Robert F, Capt,2
Overholser, Wm. H., Capt
Poulton, Charles R., WO
Sandlin, Ray L., Capt, 1
Sawyer, Robert D., Lt
Schmidt, John L., III, WO
Vance, James D., Jr., Lt
Welch, Wm. D., Jr., Lt
York, Val D., Capt

SOLDIER'S MEDAL

Boswell, Leonard L., Capt

BRONZE STAR FOR VALOR

Beaver, Wayne N., Sp5
Drelick, Robert J., Sp4
Drughala, John F., Sp5
Stafford, Ronald W., PFC
Thurman, Wendell L., Capt
Walling, Edward B., Sp4

BRONZE STAR

Barrett, Thomas P., Lt
Begay, Donald E., CWO
Bliven, David M., Capt
Boswell, Leonard L., Capt
Chamberlain, Wm C., Maj
Champlin, Donald A., Maj
Cosimano, Anthony, CWO
Crotty, Howard R., CWO
Daum, John P., WO

BRONZE STAR

Dickens, Bobby L., CWO
Eskey, Richard L., WO
Fernitz, Manfred, CWO
Florence, David L., Capt
Ford, Larry K., WO
Geurin, John A., Capt
Glenn, John F., Capt
Hunt, Gordon M., Capt
Jones, Bill, Jr., Capt, 1
Johnson, Robert A., CWO
Kallestad, Richard D., Maj
Keene, Thomas L., CWO
Knight, Clarence E., Capt
Koehn, Melvin L., CWO
Krofchek, James M., Capt
Lasseter, Paul L., CWO
Latham, Bobby R., Maj
Lemes, Ralph V., Capt
Lemmon, John D., M/Sgt
Lockwood, Bill G., Maj
Lorimer, David S., CWO
Lowie, William P., CWO
McConnell, Delmar, Capt
Martin, Gary D., CWO
Molinelli, Robert F., Capt
Moorehouse, Dean T., WO
Morgan, Marvin M., Maj
Nelsin, Darrell, Capt
Nydegger, Neil, Capt
O'Quinn, Edwin B., CWO
Patton, Jerry G., Capt
Payne, Gerald O., SSgt
Radspinner, Frank H., Capt
Robertson, Victor M., Maj
Ross, Carl L., Capt
Simpson, James H., CWO
Smith, Albert M., Capt*
Smith, Charles D., CWO
Smith, Lee C., Jr., Capt
Spencer, Bobbie J., Capt
Stephenson, Clovis W, CWO
Street, Robert A., Sp4*
Taylor, Joseph E., Capt, 1
Townsend, Willis M., Capt
Van Meter, Don R., MSgt
Whitlock, Kydean, Maj
Williams, Robert M., Capt
Woodbine, Gerald V., Capt

AIR MEDAL FOR VALOR

Arbuckle, Louis L., PFC
Arsenault, Brian R., WO
Bard, Alphonse E., Sp5
Bavaro, Edward J., Capt
Bogle, Charles S., Lt
Brannan, Robert E., Sp5
Breedlove, Ben L., Capt
Brian, William L., Lt
Cavanaugh, Michael, Capt
Clinton, Jessie L., Sp5
Copas, Damon, PFC
Cottman, Robert L., Lt

AIR MEDAL FOR VALOR

Crosby, Harley A., Sgt
Daum, John P., WO
Doades, Michael S., WO
Dorsey, James J., Lt.
Elder, James H., Lt
Farnham, Donald W, Capt
Flores, Roberto, Sp4
Fuller, John R., WO
Garcia, Robert R., Sp4
Gillespie, Lawrence E., Lt
Hall, Gordon S., CWO
Hill, Alfred, Sp4
Hunt, Gordon M., Capt
Ingram, Duane C., Capt
Kamenar, John M., Jr., Lt
Keene, Thomas L., CWO
Kelly, Ronald H., Sp4
Koenig, Thomas J., WO
Knighten, Eddie, Sp5
Leavitt, David A., PFC
Lerner, Frederick N, CWO
Lewis, Calvin B., Sp4
McAllister, Darl, Capt
McElroy, James L., CWO
Michalic, Robert, Sp5
Milner, Thomas W., III, Lt
Moen, Arthur D., Capt
Moore, James I., Capt
Nelsin, Darrel, Capt
O'Brien, Thomas R., PFC
Overholser, Wm H., Capt
Pettibone, Larry E., WO
Price, Monty B., Lt
Richardson, Hugh R., Sp4
Riley, Joe C., Sp5
Roberson, Thomas C., Maj
Roberts, William, Sp4
Sabre, Randolph E., Capt
Scholin, Orrin L., Sp5
Snyder, Norman L., Sp5
Smith, Horace M., Capt
Stariha, Paul L., Sp4
Teeter, Charles E., Capt

AIR MEDAL FOR VALOR

Thompson, Charles C., WO
Vandervoort, Benj. F., WO
Voorhees, Richard D., Sp5
Watts, Marvin D., PFC
Webb, Richard W., SSgt
White, Robert A., Sp4
Wolf, Wallace D., WO
Woodbury, Theodore, Cpl
Yahiro, Junichi E., Lt
Young, Earl R., WO

COMMENDATION MEDAL FOR VALOR

Balverde, Edward, PFC
Begay, Donald E., CWO
Crotty, Howard R., CWO
Elsea, J.D.M., PFC
Fort, Foster W., Jr., CWO
Harmon, Kenneth J., Lt
Heck, William R., PFC
Hight, Lonnie J., Sp5
Huber, Robert W., PFC
Huffman, William W., Sp5
James, Daniel D., Sgt
Johnston, Robert M., CWO
Leach, Carl G., PFC
Lopez, Louis, Sp4
Lorimer, David S., CWO
Melvin, Joseph J., Sp5
O'Quinn, Edwin B., CWO
Rosinski, Stanley, SSgt
Stafford, Ronald W., PFC
Trainor, James W., Sp4
Vandal, Normand E., SSgt
Vantonne, Gordon A., Cpl

MOODY RECEIVES DISTINGUISHED FLYING CROSS

Lieutenant Jim Moody, assigned to the 197th Aviation Company, 145th Aviation Battalion, Vietnam, is shown receiving the Distinguished Flying Cross from Brigadier General George P. Seneff, Jr., the Commanding General of the Aviation Brigade.

CONTRACTS

■ Lycoming Division, Avco Corp., Stratford, Connecticut, for production of aircraft engine components $1,894,791 on April 13, $833,250 on April 15, $2,049,949 on April 27, $3,203,900 on April 28, and $954,773 on May 3, and $2,407,117 on May 5; for modification kits to be used in converting T-53-L-11 engines to -13 engines, $3,695,000 on April 15; and $1,121,904 on April 15 for production of turbine rotor blades.

■ Chandler Evans, Inc., West Hartford, Connecticut, for production of fuel control units for the T-53 engine, $3,114,000 on April 12 and $3,114,000 on April 20; and for production of fuel control components $115,638 on April 13; for production of aircraft engine components and support equipment, $195,406 on May 5.

■ Bell Helicopter Company, Fort Worth, Texas, for production of tail boom assemblies for the UH-1 helicopter, $2,797,596 on March 31; for production and delivery of UH-1 hub assemblies $1,209,495 on May 4.

■ Canadian Commercial Corporation of Ottawa, for production and delivery of aircraft engine components, $113,121 on May 3 and $95,966 on May 4.

■ Conair, Inc., Glendale, California, for production and delivery of UH-1 hydraulic servo cylinders, $158,548 on April 13.

■ SKF Industries, Philadelphia, Pa., for production and delivery of UH-1 rotor blade bearings, $83,264 on April 14.

■ Grumman Aircraft Engineering Corp., Bethpage, N.Y., for production of 16 OV-1C Mohawk aircraft, $8,820,000 on April 15.

■ Astronautical Corporation of America, Milwaukee, Wisc., for production of aircraft attitude indicators, $755,791 on April 19.

■ Guenther Manufacturing Co., Buchanan, N.Y., for production and delivery of cargo parachute release mechanisms, $1,060,460 on April 21.

■ Aerojet General Corp., Azuza, Calif., for production and delivery of personnel armor kits for OH-13S helicopters, $110,103 on April 26.

■ McGraw Edison Company, West Orange, N.J., for production of UH-1 control assemblies, $146,366 on April 27.

■ Goodyear Aerospace Corp., Akron, Ohio, for production and delivery of personnel armor kits for CV-2 aircraft, $177,837 on May 2.

■ Sikorsky Aircraft Div., United Aircraft Corp., Stratford, Connecticut, for production of six CH-54A Flying Crane helicopters, $7,010,000 on May 4.

USAPHS GRADUATES ITS 10,000TH STUDENT AT 13 MAY CEREMONIES

The graduation of WOC Robert Wright from the Primary Helicopter Center as the 10,000th student to complete training, marked a major milestone for the Fort Wolters facility and the members of the graduating classes. Classes 66-13 and 66-14 will recall Friday the 13th of May as "Lucky 13" for their 289 members. The latter comprised the largest group to have completed training at Fort Wolters to date.

Guest speaker at the graduation exercises was Major General Harry H. Critz, Commandant of the Artillery and Missile School, Fort Sill, Oklahoma.

Expansion Continues

Construction has started at 11 flight training sites at Fort Wolters under provision of contracts totaling over $4 million.

The construction firm of Brown and Root, Inc., Houston, Texas, recently received a $1,972,000 contract to build the USAPHC's second heliport on a 97-acre tract of land next to the Mineral Wells Municipal Airport. The new heliport will be capable of parking 300 aircraft.

Supporting facilities for the heliport will include a maintenance hangar with allied supply and administrative areas and control tower, fire station, fuel and oil storage facilities, parking lot, and access roads.

Six new flight training sites are also under construction. These include two permanent stagefields, two tactical stagefields, and two refueling field areas. The new stagefields, designated No. 8 and No. 9, will be ready for use by mid-August. The permanent stagefields will consist of six flight lanes, hovering apron, control tower, night lighting facilities, field house, and parking area.

The tactical stagefields will have the same basic layout as the permanent fields; however, hovering and refueling aprons, and night lighting facilities will be omitted.

Grading and clearing is under way at the two refueling sites, which have been given the Vietnamese names, *Pleiku* and *Soc Trang*. These sites consist of two parallel landing strips 1,400 feet long and a briefing building. June 21 is the completion date for these sites.

A major change of interest to commanders in the field is the required composition of a Flying Evaluation Board as spelled out in the new AR 600-107, entitled "*Medical Restriction from Flight Duty, Suspensions, Flying Evaluation Boards, and Flight Status Review System.*"

While the old AR 600-107 required that two members of the Flying Evaluation Board be Army Aviators, the new AR 600-107 only requires that one member be an Army Aviator and that one member be a non-rated officer of the command.

Additional Streamlining

Under the old regulation an Army Aviator was required to appear before a Flying Evaluation Board when he requested to be removed from flying status. Under the new regulation this requirement for a Flying Evaluation Board may be waived by Department of the Army when this action is in the best interests of the Army and without prejudice to the individual.

Of concern to Army Aviators in the U.S. Army Reserve is one provision of the new regulation covering the final review of Flying Evaluation Boards. The major commander no longer has the reviewing authority. All Flying Evaluation Board actions pertaining to Army Reserve aviators must be forwarded to Department of the Army for final review and disposition.

An artist's rendition of the new main Officers' Open Mess Building now under construction at the U.S. Army Aviation Center at Ft. Rucker.

A provision of this new regulation should also be of interest to anyone who is considering the idea of requesting voluntary suspension from flying status for career development purposes or for any other reason.

The new regulation states that when an individual is indefinitely suspended from flying status and permanently removed from the Army Aviation Program – and this would be the case of the individual who requests voluntary suspension – return to flying status of that person in the future is denied. Consequently, once an Army Aviator receives a voluntary suspension from flying status, his chances of returning to flying status at a later date are negligible.

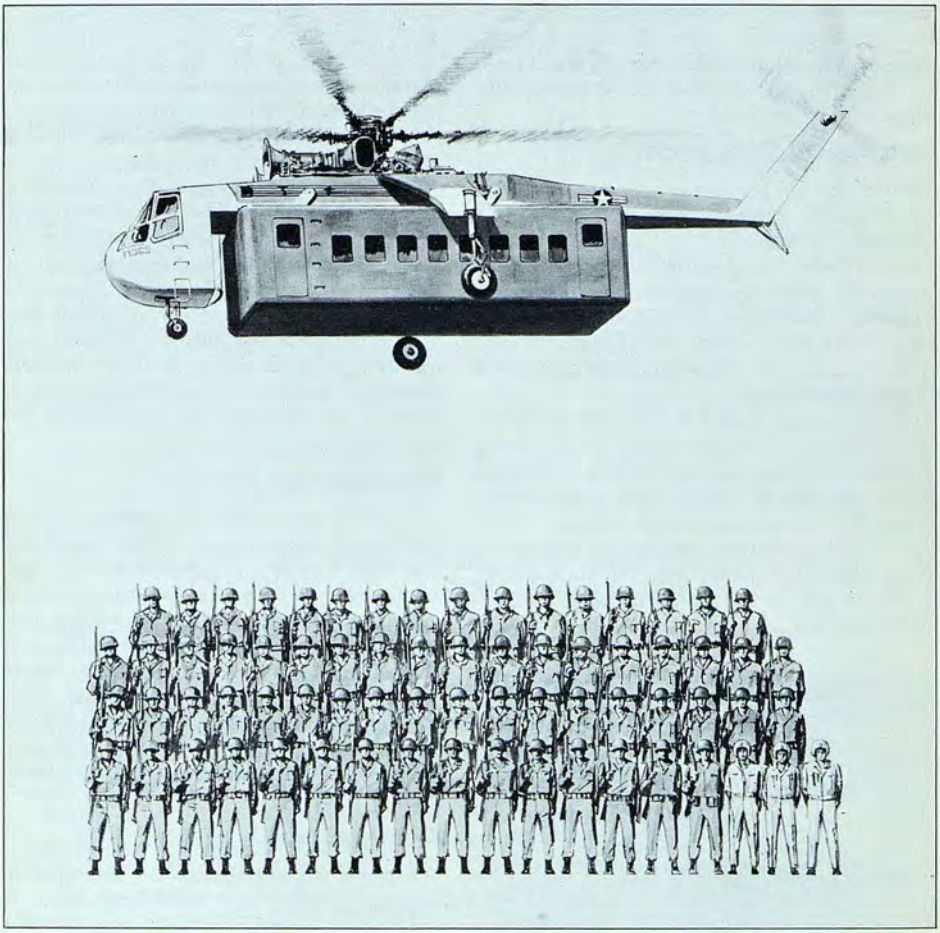
Restoration by DA

Another major change concerns the restoration of an aviator to flying status upon completion of Flying Evaluation Board proceedings. Under the new regulation, once an individual has been suspended pending completion of a Flying Evaluation Board, only Department of the Army can restore him to flying status. The point here is that Flying Evaluation Boards and the proceedings of those board actions should be expedited in the interest of the individual aviator, as well as the Army.

Refusal to Fly

The old regulation had no provision for suspending an aviator who declined to fly a category of aircraft or a certain model of aircraft. Now, an individual who refuses to be cross-trained into another category of aircraft, or one who refuses to fly a specific model of aircraft, may be suspended and removed from the Army Aviation Program for refusal to fly.

or 67 combat-equipped troops.



mission of 140 miles. The Skycrane can also carry vans designed as completely-equipped and fully-staffed command posts, hospital units or communications stations.

No other Free-World helicopter has the Skycrane's lift capability: more than 10 tons, at altitudes up to 9,000 feet – even on a 95-degree day. And the Sikorsky Skycrane was designed for growth to even greater payload capacities, as the need develops.

Sikorsky Aircraft
STRATFORD, CONNECTICUT
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DIVISION OF UNITED AIRCRAFT CORPORATION
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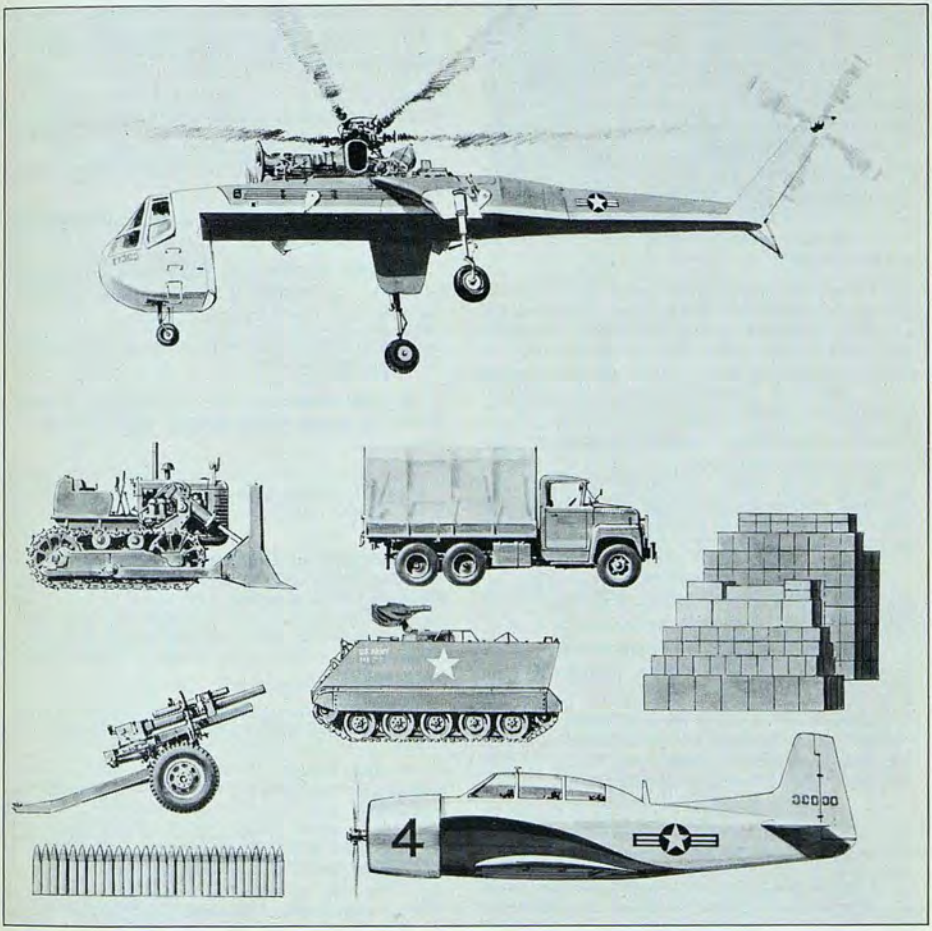
Sikorsky's Skycrane® can carry over 10 tons of almost anything



Sikorsky Skycranes joined the 478th Transportation Company (Heavy Lift) in support of the First Cavalry Division (Air Mobile) in Vietnam in September.

How are they doing?

Thus far, they have retrieved many millions of dollars worth of disabled aircraft. They have airlifted bulldozers, trucks, 105-millimeter howitzers, water trailers, Army "conex" containers, signal vans, fuel bags, and ammo. One delivered enough C-rations to feed a battalion for three days.

Bulky loads are suspended below the helicopter; personnel travel in a detachable van. The Skycrane can carry 67 combat-equipped troops, plus crew of three, on a round-trip

OVER 600 ATTEND AVCOM-AAAA INDUSTRY BRIEFINGS

More than 600 key industry executives and Army aviation representatives gathered at the Sheraton-Jefferson Hotel in St. Louis, Mo. in early May, to attend an AVCOM-AAAA jointly-sponsored seminar providing *Advanced Planning Briefings for Industry*.

The purpose of the 2-day briefings was to outline Army aviation capabilities and requirements for the immediate future, and to provide the attendees with up-to-date progress reports on all current projects.

Assistant Secretary of the Army (R&D) Willis M. Hawkins delivered the keynote address at the first day's classified sessions, leading a 19-member group of Army spokesmen. General Frank S. Besson, Jr., Commanding General of the U.S. Army Materiel Command, was the principal guest speaker at the 5 May luncheon.

During the 2-day seminar, attendees were briefed on the following:

"Army Procedures for Establishing Aviation Requirements"—Col. Leon B. Cheek, Jr., Chief, Mobility Div., Dir. of Mat., CDC.

"Concepts and Objectives of Army Aviation"—(See p. 4); Brig. Gen. Robert R. Williams, Director of Army Aviation.

"AMC Organization for Aviation"—Col. William B. Dyer, Chief, Aviation Office, Program Control Div., AMC.

"Introduction to Army aircraft family and an outline of the approach to the individual briefings on each requirement"—Brig. Gen. Tobias R. Philbin, Jr., Deputy Director of R&D for Plans, AMC.

"V/STOL Trainer"—Maj. Gen. John J. Tolson, III, CG, U.S. Army Aviation Center and Commandant, U.S. Army Aviation School.

"Avionics and Surveillance Gear"—Lt. Col. Leslie G. Callahan, Jr., Director, Avionics Labs, ECOM.

"Light Observation Aircraft"—Harold S. Johnson, Chief, Preliminary Design Division, AVLABS.

"Surveillance Systems"—Col. Lloyd B. Leech, Chief, Combat Surveillance Office, AMC.

"Utility Aircraft Systems"—Louis Gerback, Project Coordinator, MOCOM.

"CH-54 Flying Crane"—Lt. Col. John F. Denhart, Project Manager, Flying Cranes.

"Armed Aerial Fire Support System"—Col. L. W. Leeney, Project Manager, AAFSS.

"Maintainability Requirements"—Col. John R. Adie, Director, Maintenance Training Department, USATSCH.

"VTOL Artillery"—Capt. James P. Woolnough, Project Officer, AVLABS.

"Ancillary QMDO's and SDR's for Aviation Support"—Lt. Col. William R. Huggins, Chief, Materiel Division, CDC Trans Agency.

"Airframe-Propulsion"—Larry M. Hewin, Technical Director, AVLABS.

"Aircraft Weaponization"—Col. Nelson L. Lindstrand, Jr., Project Manager, Aircraft Weaponization.

Subjects discussed at the 5 May unclassified briefings included:

"Objectives of Configuration Management"—Maj. Gen. Wiliam B. Bunker, Deputy Commander for Research and Acquisition, AMC.

"Design Control Requirements; Implementation of AMCR 11-26"—William H. Gillespie, Deputy Chief, LOH Field Office.

"Data Relationship Requirements"—Col. Charles Campbell, Chief, AMC Technical Data Office.

"Product Support Relationships"—Paul L. Hendrickson, Command and Project Management Office, AVCOM.

"Industry Viewpoints on Configuration Control"—Bastian Hello, Martin Company.

Brig. Gen. Howard F. Schiltz, AVCOM commanding general, and Brig. Gen. O. Glenn Goodhand, USA (Ret.), AAAA national president, provided program continuity throughout the briefings in introducing the various speakers. The meeting marked the initial series of briefings co-sponsored by the AAAA with a military agency to expedite communications between an Army aviation and the members of the aviation industry.

AAAA MAY ACTIVITIES

■ LINDBERGH CHAPTER. Joint sponsorship with AVCOM of Advanced Planning Briefing for Industry. Sheraton-Jefferson Hotel, St. Louis, Mo. 3-5 May.

■ SOC TRANG TIGER CHAPTER (Vietnam). General membership business meeting; Chapter elections followed by a "social." 6 May.

■ FRANCE CHAPTER. Combined professional, social, and business meeting. Aviation Industry films, introduction of new Chapter officers, dinner-dance. Poitiers, France. 14 May.

■ RICHARD H. BITTER CHAPTER. Armed Forces Dinner-Dance; film footage from Vietnam; introduction of new Chapter officers. Corpus Christi, Texas. 21 May.

■ ILLESHEIM CHAPTER (Germany). Professional-business dinner meeting with Exercise Winter Express slide show and Chapter elections. Members only. 27 May.

■ GRAND CANYON CHAPTER. General membership business luncheon. Chapter elections. Members only. 31 May.

AAAA JUNE ACTIVITIES

■ FORT SILL CHAPTER. Annual AAAA Summer Formal Dinner-Dance. Ft. Sill Officers' Open Mess. Refreshments at 1830. 3 June.

■ ARMY AVIATION CENTER CHAPTER. Birthday Party Celebration at Lake Lodge, Lake Tholocco. Picnic Lunch, Water Ski Show, Sport Parachute Jump, Boat Rides, Clowns, Games, Teenage Dancing. 1300-1700 on 5 June.

■ LINDBERGH CHAPTER. Professional dinner meeting. Brig. Gen. Howard F. Schilz, Commanding General, AVCOM, guest speaker. Ruggeri's Restaurant, 2300 Edwards Street. Refreshments at 1730 hours. 9 June.

■ FORT WOLTERS CHAPTER. Birthday Barbecue. Sen. John Tower (R.Tex.), guest speaker. Presentation of Chapter Awards by Gen. Hamilton H. Howze, USA (Ret.). HueyCobra on display. Barbecue by Jetton. Picnic Area at swimming pool with refreshments at 1700 hours. 10 June.

■ ALAMO CHAPTER. Catered Barbecue for general membership. Lone Star Brewery. 15 June.

■ FORT BENNING CHAPTER. Late afternoon Open House AAAA Social following First Annual Aerial Gunnery Competitions. Details to be mailed directly to participants in early June. 30 June.

SCHOLARSHIP AWARD

Miss Betty Ruth Williams (center) is shown receiving a 1966 AAAA Scholarship check of $500.00 from Maj. Gen. John J. Tolson, CG of Fort Rucker, as her proud parents, Major and Mrs. W.H. Williams (right) look on. Col. Edward McMaken, USA (Ret.), president of the AA Center Chapter, is shown at the left during the presentation ceremonies.

LIST OF AAAA DONORS TO 1966 SCHOLARSHIP FUND

A PARTIAL LIST OF THOSE MEMBERS WHO MADE DIRECT DONATIONS WITH THEIR RENEWALS

Captain James M. Adler
Major John J. Ahern
Mr Irvin F. Amsinger
Lt Col Norman I. Anderson
Mr Joseph L. Andrews
Lt Taro B. Asami
Lt Col John F. Aschoff, Jr.
Maj Henry J Baringer, Ret.
Lt Col Robin M Barrett, Jr.
Lt Col Floyd T. Barron
Lt James T. Bartlett
Maj Wilford A. Baugh, Jr.
Maj Larry J. Baughman
WO Eugene A. Beam
Col George S. Beatty
Capt Helmer H. Behrens
Maj Thomas P. Berry
Capt Judson L. Bireley
Lt Col Charles S. Black
Lt Col Donald C. Blatt
Capt Roger H. Boehnke
CWO Eldred G. Bourne
Maj Harold O. Bourne
Col Walter D. Bowden, Ret.
Maj William D. Brandon
Col Delbert L. Bristol
Maj Frank Brooks, Jr, Ret.
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Lt Col John R. Brown
Mr Earle J. Buckner
Lt Col Alvin F. Burch
Maj William F. Callinan
Col Hubert Campbell, Jr.
Lt Col Lee R. Cantlebary
Mr Alfred C. Carrell
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Major Denzel L. Clark
Lt Col Arthur M. Clarke
Maj Guy R. Claybourn, Jr.
BGen D.C. Clayman, Ret.
Lt Col John E. Cobb
Capt Willard D. Conklin
Major Duncan S. Cook
Maj William L. Corley
Major Michel Costino
Maj E.B. Covington, III
Maj William E. Crouch, Jr.
Captain Mark H. Crowell
Captain Clark H. Cummins
Lt Col L.L. Dantzer, Ret.
Lt Col Barrie S. Davis
Captain Marion L. Davis
Lt Col Richard S. Demory
Lt John C. Dennison
Maj Rudolph D. Descoteau
Major Paul A. DeWitt
Capt Ronald DiGennaro
Lt Col Chester A. Dillahunt
Lt Col Robert R. Dobson
Captain Roy G. Doubrava
Major Roger A. Doucette
Maj Thomas W Downes, Jr.
Maj Daniel C. Dugan
Major Robert V. Dunne
MGen E.F. Easterbrook
Mrs Nora R. Ekstrom
Lt Col A.F. Epsaro, Ret.
Capt Robert F. Estes, Jr.
Major Paul R. Ewing
Major Robert F. Eyman
SFC Oscar F. Findeisen
Major John L. Finley
Major Russell J. Folta
Mr Julius E. Forcella
Capt Jimmie S. Ford, Sr.
CWO Loren N. Foster
Major Robert M. Fowler
Major James W. Froelich
Captain James J. Gaffney
Mr Hugh C. Gayler
Lt Col John C. Geary
Mr Joseph Geuting, Jr.
Major Glen D. Gibson
Captain Eduardo Gonzales
BGen O.G. Goodhand, Ret.
Maj William H. Goodspeed
Lt Col Charles V Graft, Jr.
Maj John M. Grasmeder
Captain John H. Greene
Major Adolph H. Grimm
CWO James R. Groover
Major Evans J. Guidroz
Maj William F. Gurley
Major Jerry D. Hahn
Major Warren C. Hale
Capt Charles A. Hankins
Major Thomas O. Hardy
Col Thomas E. Haynes
Major Gary R. Heffner
Col Jack W. Hemingway
MSgt Walter L. Hesse
Mr J.D. Heyden
Lt Roy A. Highsmith
Maj Raymond F Holleran
Major Milton Horwitz
Lt Col James H House, Ret.
Lt Col Harmon Howard
Major Lonnie T. Howard
CWO Charles E. Howell
Capt Harold L. Huff, Jr.
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