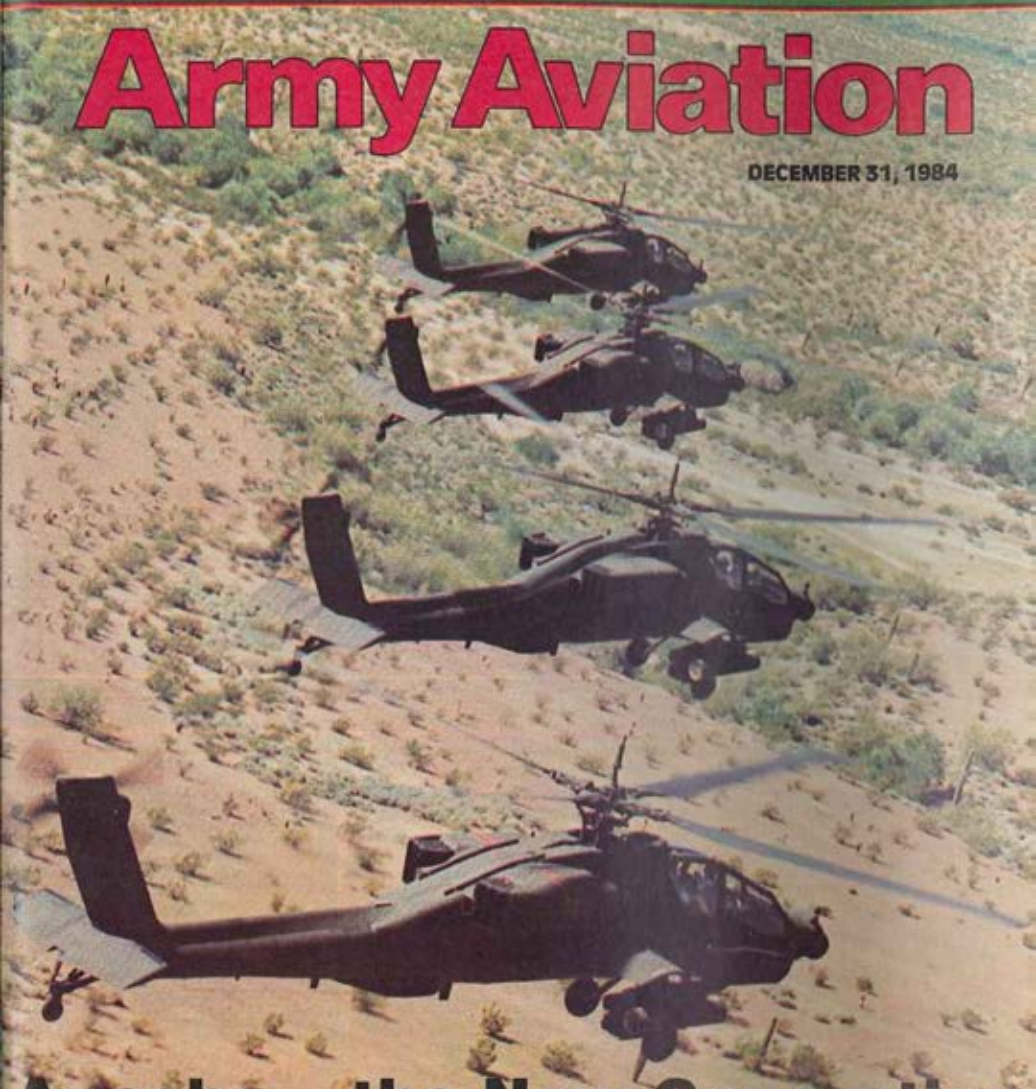
A SPECIAL ISSUE DEVOTED TO THE EQUIPMENT

USED IN ARMY AVIATION DURING 1942-1984

Army Aviation

DECEMBER 31, 1984



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COVER PHOTO

FOUR U.S. ARMY AH-64A APACHE HELICOPTERS IS SHOWN IN NAP OF THE EARTH FLIGHT OVER THE ARIZONA DESERT.

ADVERTISERS

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1984 EQUIPMENT ISSUE

VOLUME 33 — NUMBER 12

DECEMBER 31, 1984

ARMY AVIATION MAGAZINE

How to get a good idea off the ground.

As the light helicopter General Motors

The Allison Gas Turbine Division wraps today's technology in the traditions of a high-volume, low-cost engine producer.

GM's Allison Division first made its mark as a supplier of military power plants by developing the 12-cylinder V-1710 prior to WWII. By war's end, the mainstay of America's pursuit squadrons had been uprated beyond 1000 HP, and more than 70,000 had been delivered.

When the world turned to turbines, GM led the way. This country's first production jet fighter, the P-80, was powered by an Allison J33 turbojet. In Korea, 70% of U.S. tactical jet missions were flown on Allison engines.

Since then, Allison gas turbines have fulfilled a variety of missions on fixed wing aircraft. AEW on the E-2C. ASW on the P-3C. We power the workhorse C-130, and the RFB Fantrainer. And Allison's high-performance TF41 turbofan does tactical duty on the A-7 for both the Air Force and the Navy.

We also build seagoing turbines. Generators to power the electronics aboard the U.S. Navy's *Ticonderoga*- and *Spruance*-class ships. Primary propulsion units for the Canadian Navy.

All told, we've produced more propulsion gas turbines than any other company in the United States. But it is the application of the turbine to light helicopters that we understand as no other engine maker does.

The Allison T63 was the first small turboshaft engine, successfully solving the problems of scaling down large-turbine efficiency. Subsequent growth versions of that engine have pioneered the market for light rotary-wing aircraft. And have advanced the state of the light helicopter art.

advances, supplies the power.

Today, the peak of the light helicopter pyramid is occupied by the Army's OH-58D. AHIP. Designed to be the eyes and ears of the battlefield commander, its heart is an Allison gas turbine. Capable of delivering 650 SHP, to maximize agility in bold, pop-up maneuvering.

Fuel control is electronic. The only U.S.-developed unit certified and flying, it is built around a custom microprocessor designed by GM specifically for controlling engines. And it is produced in mass quantities for high reliability.

The light helicopter of tomorrow will be the LHX. It will make demands on its engine that GM technology is uniquely positioned to meet. With extended hours of testing at near stoichiometric conditions. With CAD/CAM. With finite element analysis. With knowledge of advanced fluid dynamics.

Allison is aware of the challenges. We are already funding the research and working with materials and technology that could supply the answers. Such as heat-resistant lamilloy. Or ceramic turbines. Or digital controls.

The Allison Gas Turbine Division is just one part of the new group at GM committed to providing the latest in tactical technology–on time and on cost. The General Motors Defense Group. We're your ultimate ally in the fight for dependable, affordable defense. To enlist our aid, call 1-800-THE ALLY.

THE ULTIMATE ALLY

GM

GENERAL MOTORS DEFENSE GROUP

Among Warriors

I always considered 322 the luckiest set of digits in history. That was my draft lottery number in the late 1960's, a time when the higher the number, the better. The numbers stopped at 366, and 322 kept me out of the military and in St. Joseph's University, the Jesuit school in Philadelphia. The one instinctive thing

I knew about the military was that I wanted no part of it. It denied life.

A rugby player from a little town outside Boston, who sat next to me in a math class, had a lottery number in the low 50's. I said goodbye to him one Friday in autumn. He was going home for the weekend. The following Monday he didn't show up for class. By the Monday after that, we realized he wasn't coming back. The war was devouring bodies fast. For the rest of that semester and into the next, no one would sit at his desk. He was our first casualty.

I started thinking about him again when, on a magazine assignment, I recently visited another school, the United States Army War College at Carlisle in the fertile green farmland of central Pennsylvania, just a short forced march from Gettysburg.

I was going there to meet what might be called our professional warriors, a class of men that traces its lineage back to the misty time warp of feudal Prussia.

"They'd be worried!"

America being America, we aren't supposed to have a class like this; or at least not admit to it. But the War College glories in the concept. Here, for the first time, I had the opportunity to observe career soldiers pursuing their vocations on the highest level, preparing for the kind of massive, conventional land war—a world war—that some modern skeptics have facilely dismissed as the stuff of textbooks. Not so the men who are gearing up to wage it, men like the hard-eyed Ranger with five tours in Vietnam who confided to me sincerely: "If the Russians really knew what was going on here, they'd be plenty worried."

Physically, the War College is a splendid collection of very old buildings and very up-to-date equipment. In its wainscoted libraries and musty archive rooms, there's the hush of a museum — long, carpeted corridors are lined with glass cases that exhibit uniforms. The walls are hung with captured battle flags and pictures of decorated heroes. Young sentries in greatcoats stand gazing across the expanse of the parade ground where once, a century ago, the cavalry practiced drills. Horsemanship is still considered a personal virtue here and a priceless talisman of command. The place is all about valor, honor,

ABOUT THE AUTHOR
MIKE MALLOWE CURRENTLY SERVES AS A SENIOR EDITOR AT "PHILADELPHIA MAGAZINE."

BY
MIKE
MALLOWE

country. Even the mannequins in their stiff blue uniforms seem animated with pride.

At the same time, the War College is a functioning military installation—just another base. The stifling dreariness of Pentagon bureaucracy constantly intrudes. The chatter and clatter of secretaries and typewriters drifts from the open doors of fluorescent-lighted offices. There is nothing dashing in the simulated wars the men train to fight. Ponderous columns of armor are massed and remassed, theoretically, at the border of some unsuspecting nation. Reality has sucked every drop of romance out of war, yet the good, gray colonels who sit at their personal computers here, tinkering with troop movements and force projections, carry on just the same, attempting to temper the technology with what one critic has called the need for "traditional warrior values." "War is what this place is all about," one husky infantry officer told me, reflecting that very attitude. "We don't call it the Peace College."

Preparing for Armageddon

They spend 10 months here, about 250 in a class, mostly colonels and lieutenant colonels in their mid-40's, usually 20-year men (there are a few civilians each year and usually several women). They live on campus or in the town, recuperating from the burnout and the petty politics of the peacetime Army as they study the great conflicts of the past, discuss the imperatives of the present, and prepare for all manner of future Armageddons.

Most are known as "dirty boots officers." That's because they are still young enough to have been low-level commanders in Vietnam, where they watched the kids in their outfits get blown away. They know what it's like to see dying men pay for other people's mistakes. That wasn't always the case here. Once, arm-chair generals predominated, teaching the theory of battles they had never faced to a generation of unbloodied officers too young for Korea and too old for Vietnam. Not anymore. Now, it's quick minds in hard bodies with the scars to prove it. Plenty of scars. Especially the kind that don't show.

These new officers are poised to take over. Whatever the war, they mean to win it. They are going about it very deliberately. No one has to remind them that the United States hasn't had a single significant land victory since the invasion of Inchon in 1950. Merciless revisionists that they are, they fall asleep most nights worrying about the appalling absence of right stuff.

"A gift of faith"

Their heroes are **Matt Ridgway, Omar Bradley, Mark Clark.** Their ideal is the spirit of Normandy's Operation Overlord. What they'd probably like is a very conventional war—winnable and inevitable and of very human scale. In the day of the MX, that's asking a lot, but at the War College, they have the gift of faith. They have also seen enough of war to try to prevent it, even as they prepare to wage it.

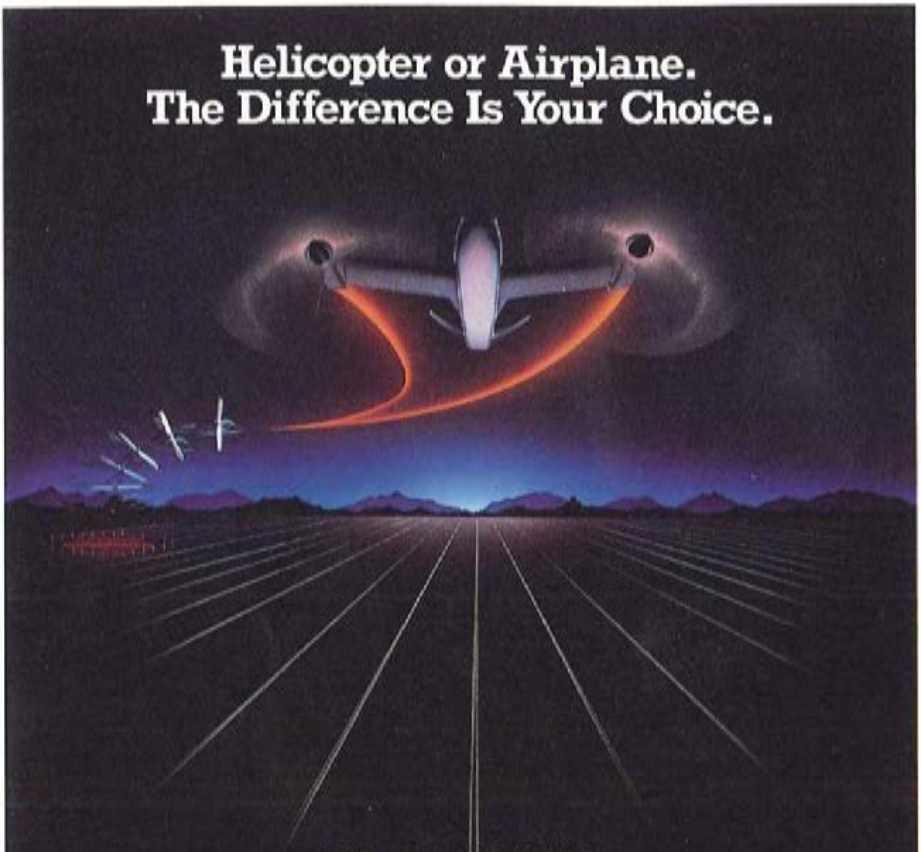
"We don't have one now," a colonel told me with a deep sense of satisfaction. "That means we're doing our job. It's working."

I came away liking these men enormously, wanting them desperately to succeed. My talks with them showed me how they have wrestled with the ethics of their vocation and considered their ramifications.

They seem as passionate about life, as contradictory, as capable of glorious excess and sobering sacrifice as the rest of us—as the best of us.

Someday we may need such men. I, for one, take great comfort now in knowing that they are there, perfecting their arcane arts, ancient as Spartans. IIIII

Helicopter or Airplane. The Difference Is Your Choice.



The Bell LHX.

Bell's Advanced TiltRotor – The BAT – lifts off and hovers with helicopter precision. Then, in response to your single command, the rotors begin tilting forward, you accelerate, and in nine seconds you're in command of a fixed-wing type aircraft. And you're off like a bat at 270 knots per hour.

This extraordinary capability, combined with the BAT's unparalleled nap-of-the-earth agility, means the Army pilot of tomorrow will maneuver as never before, employing advanced tactical concepts that meet the Army's LHX requirements for aircraft that can move fast, strike deep and keep the enemy off balance.

Through the teamwork of Bell Helicopter Textron, Texas Instruments, Sperry Flight Systems and Honeywell, the BAT will employ the most sophisticated technologies of the future. Composite construction to reduce cost and weight. Sensor fusion for the most efficient mission equipment package. Digital/optical flight controls to optimize man-machine interface. All this only from the Bell LHX team.

The Army has the right idea...Bell has the right team.

Bell Helicopter TEXTRON
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Texas Instruments

SPERRY

Honeywell

1984 — A year characterized by solid aviation accomplishments

By Brig. General Wayne Knudson, Army Aviation Officer, ODCSOPS, Department of the Army

IT has been an exciting year and we have made exceptional progress in Army Aviation. Our successes are many and cover a broad range of topics.

The Aviation Branch

The year 1984 was off to a fast start with tangible evidence of the forthcoming aviation branch establishment. In a January 16 ceremony at Ft. Rucker, the Commanding General, **MG Bobby J. Maddox,** was presented the first set of the new aviation branch insignia.

On February 15, at a Pentagon ceremony, the Secretary of the Army and the Chief of Staff signed the General Order establishing the new Aviation Branch. On April 12, the new branch became effective.

Perhaps less exciting, but essential to a robust new Combat Arms Branch, are TRADOC initiatives to centralize proponency for Army Aviation assuring that Aviation doctrine and tactics are vigorously developed to meet the threat.

Training

In the training arena, ATM flying hour requirements were refined to include hours necessary for unit training and combined arms training in addition to individual training. A more refined requirement allows the Army to better project accurate flying hour programs. This work, along with related actions, resulted in the addition of 40,000 flying hours to the FY84 program.

Significant progress was made in defining and improving **Night Vision Goggle (NVG)** training. Work has been completed on the soon to be published NVG Field Circular, FC 1-219. This circular covers NVG training and operations from A to Z, and provides detailed information on planning procedures, the flight envelope, and required equipment.

To insure NVG training capability in our units, a comprehensive program was initiated to retrofit aircraft cockpits with NVG compatible lighting. Dubbed "Night Fix", the program will convert most cockpits in the active and Reserve Component aircraft fleets.

Force Design

It was a banner year for Aviation. In February, the Chief of Staff approved a new Aviation Force Design which provides aviation brigades for each division and corps. The new designs were programmed for implementation during Total Army Analysis 91. Conversion to the new structure was accelerated and will occur during the POM period for Aviation in both the active and Reserve Components.

Materiel

In the materiel area, Army Aviation passed many milestones in Calendar Year 1984. Substantial progress was recordedin a host of aviation hardware programs.

AH-64

The first APACHE was delivered to the Army in January. Since then, another 15 have been accepted. Much planning and coordination have been accomplished during the year. Training is

underway and key personnel have been selected. We are aggressively readying the Army to receive this new weapons system.

CH-47

Early in the year, initial operational capability of the CH-47D was achieved at Ft. Campbell with the fielding of the first 24 aircraft company in the 159th Aviation Battalion. Subsequently, a 16 aircraft company and a second 24 aircraft were fielded in the 159th. This was a major achievement.

LHX

This was the year the Army really "got rolling" on the **Light Helicopter Experimental (LHX)** program. Conceived as a light family of applied technology helicopters, the LHX will be produced as a scout/attack version and a utility version and will replace the aging UH-1, AH-1, OH-58, and OH-6 aircraft in the mid to late 1990's.

AHIP

The Army accepted delivery of its first three OH-58D helicopters in July. All were flown to the Yuma Proving Grounds, AZ, for **Developmental Testing (DT II)** which concluded in September meeting all test objectives. The aircraft were then moved to Ft. Hunter-Liggett, CA, for **Operational Testing (OT II).** Although not complete, OT II data thus far indicates the AHIP will meet or exceed required operational Required Operational Capability criteria. A production decision and IOC are just around the corner!

AH-1

The Cobra Night Program, or **C-Nite** as it is known, is off the drawing board. Designed to provide the AH-1S with the capability to acquire, track, and engage enemy targets through obscuration and in darkness, C-Nite will integrate a **Forward Looking Infrared (FLIR)** System in the **Telescopic Sight Unit (TSU).** Hughes Aircraft Company is on contract to develop and produce four prototype FLIR Systems.

FIXED WING

Management and sustainment of the fixed wing fleet has required a growing amount of effort, primarily due to low density and older aircraft. Requirements continue to exceed resources; therefore, making retention of current assets a must for the near term.

Several initiatives to acquire additional aircraft are beginning to bear fruit. Leasing aircraft services and the acquisition of confiscated aircraft continue to be our best options at this time.

CHANGE OF COMMAND

BG(P) ELLIS D. PARKER WILL BECOME THE COMMANDING GENERAL OF THE U.S. ARMY AVIATION CENTER AT FT. RUCKER, AL, ON 17 JAN., REPLACING MG BOBBY J. MADDOX WHO HAS BEEN ASSIGNED TO THE OFFICE OF THE VICE CHIEF OF STAFF, DEPT. OF THE ARMY.

Action is underway to define worldwide Army requirements for **Short Take Off and Landing (STOL)** type aircraft with a view toward developing a coordinated sustainment/improvement program or a replacement program.

SIMULATORS

It was an active year for simulators! Contracts were awarded for the following number of systems:

Six AH-64 Combat Mission Simulators.
15 UH-60 Flight Simulators.
Three AH-1 Flight Weapons Simulators.
One CH-47 Flight Simulator.

The Army took delivery of two AH-1 model Flight Weapons Simulators (Ft. Hood and Hanau), and completed retrofit of the Ft. Rucker AH-1Q to AH-1S FWS. Additionally, a contract was awarded to convert four fielded CH-47C to CH-47D model flight simulators.

Safety

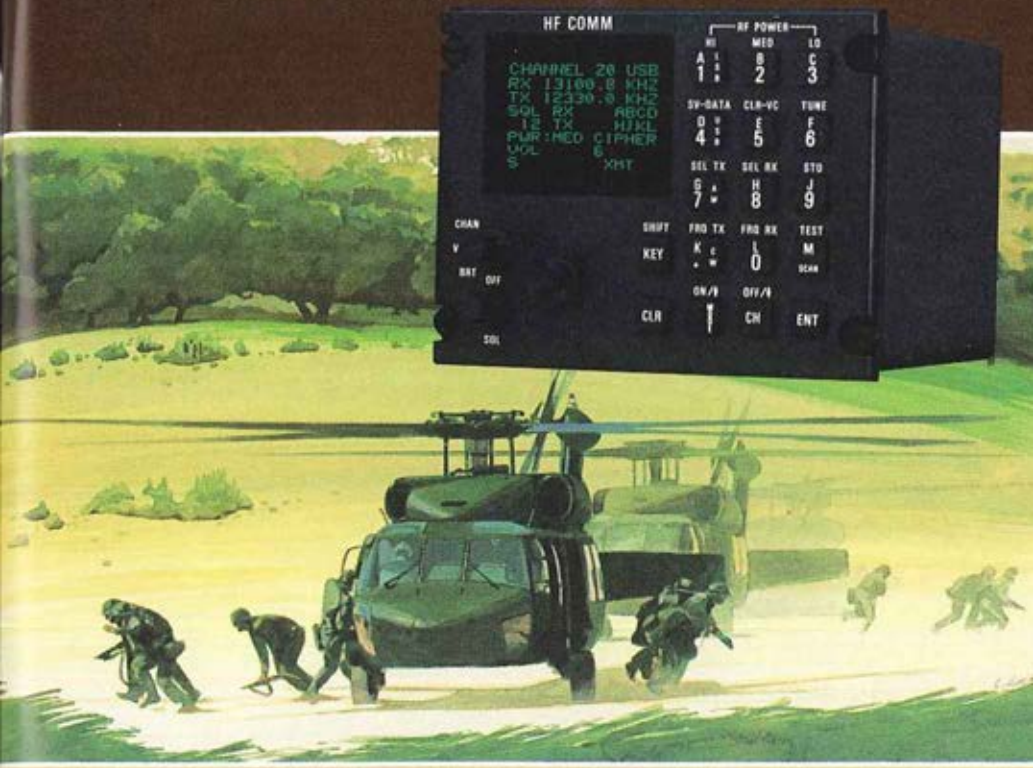
Our accident rate for FY84 was 2.53 with 39 Class A accidents. Compared to FY83 (2.33 and 37 Class A accidents), we experienced an increase. Aviation safety was vigorously worked during the year to create a safer environment for crewmembers.

Policy changes resulted which provide safer training and an increased awareness of detailed mission planning. It was not the safest year in Army Aviation, but the initiatives put in place will give us a long-term reduction in accident exposure.

In Summary

Although this has been a year of significant progress, many challenges are ahead. I look forward to sharing the new year with you in Army Aviation! IIIII

KING RADIO'S AN/ARC-199
THE LATEST WORD IN TACTICAL HF



For more than a year King Radio engineers have been busy developing and testing the latest word in HF capability: the AN/ARC-199.

When the first units enter the U.S. Army inventory, they will provide Army helicopters (including the UH-60 Black Hawk, OH-58 Kiowa, the CH-47D Chinook, the new AHIP and the UH-1 Huey) with advanced radios for the demanding nap of the earth (NOE) mission.

What does the U.S. Army find so appealing about King HF? Several features make the AN/ARC-199 stand out. One is the MIL-STD 1553B data bus interface which provides compatibility with the new avionic systems architecture. Other points in King's favor include the small size and light weight of the AN/ARC-199 (approximately 30 pounds for an installed system) and the reliability associated with King equipment. These weight and space savings allow for the addition of other mission payloads.

Utilizing four microprocessor chips, the AN/ARC-199 is able to automatically scan 20 preset channels and to automatically recognize incoming voice calls by their addresses. Add to these features selective squelch, BITE, variable power output, secure voice and data capability plus the growth potential for frequency agility, frequency link analysis, automated communications and electronic operating instructions—and you have the potential of a truly ADAPTIVE HF SYSTEM.

King Radio Corporation has also developed the companion radio to the AN/ARC-199—the AN/VRC-86. This radio, which is functionally identical to the AN/ARC-199, will be installed in Army vehicles. Both radios work with telephone-like simplicity to allow helicopter pilots to keep in touch with ground forces during tactical operations.

Since winning this U.S. Army contract over a year ago, King Radio's successes in tactical HF haven't gone unnoticed. Another HF contract has already come our way—this time to build an advanced HF for use in the rugged operational environment of tactical fighter aircraft. King is developing the AN/ARC-200 (a derivative of the AN/ARC-199), which will be used in an RAAF version of the F/A-18 strike fighter aircraft.

If King's tactical HF story interests you either from the standpoint of off-the-shelf products or adaptations of the systems we are building, contact: Director, Special Programs Department, King Radio Corporation, 400 North Rogers Road, Olathe, Kansas 66062. (800) 255-6243. Telex WUD (0) 4-2299. Cable: KINGRAD.

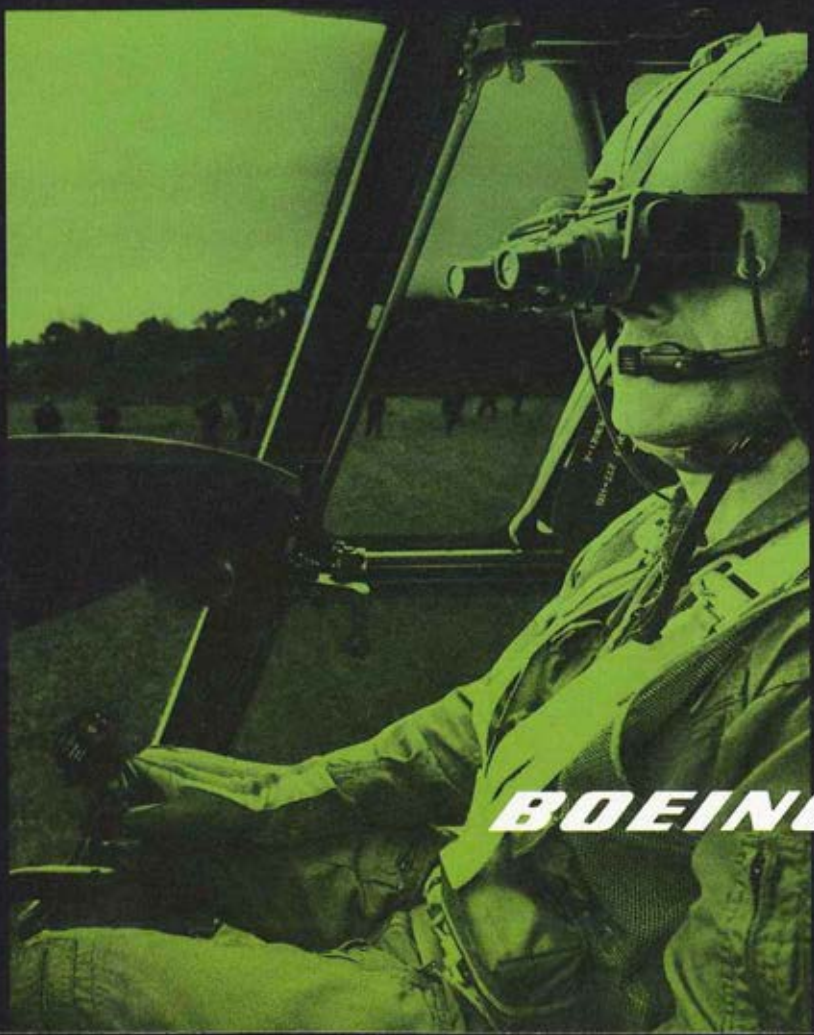
KING

CHINOOK DELTA. IT'S READY WHEN YOU ARE.

Now the night's a friend. Night vision goggles, combined with the APN 128 Doppler to pinpoint location, give the Delta full capability for round-the-clock operations on any battlefield.

For aviation support that improves the ground commander's mobility and efficiency, the Boeing Chinook Delta...GOOD NEWS FOR THE COMBAT COMMANDER.

Boeing Helicopters, P.O. Box 16858, Philadelphia, PA 19142.



We must go on, or go under.

The TRADOC Commander, GEN William R. Richardson, calls for the Army and industry to go on together.

I appreciate the invitation from **General Maddox** to come to Ft. Rucker and participate in the evening session of **Aviation Industry Day.** I speak here as a steadfast proponent of Army Aviation, and also as one with deep respect for the important role of the aviation industry.

I am grateful to you in industry for your participation. As you know, our aim is to acquaint you with our needs and problems. I assure you that your suggestions and ideas will receive respectful attention and careful consideration.

While I do not subscribe to **Clemenceau's** aphorism that "war is too important to be left to the generals," neither do I believe that we in the Army have a monopoly on knowledge and judgment. Today, there is both a need and an opportunity for industry to become a creative participant in the future of this nation's security.

The need can be seen whenever one opens the morning newspaper. The cost of supporting the military establishment is reported daily. The debate over how resources are applied is a regular and recurrent theme. The consequences of decisions made are calculated not only in terms of dollars spent and systems fielded, but in the probabilities of future victory or defeat.

The opportunity lies in the production of the best systems at the lowest price, and in the least amount of time. That opportunity, of course, raises many tough questions, both technical and managerial. Exploiting opportunity is not easy, and nowhere is it more difficult than in transitioning technological opportunities into the operational inventory.

On one hand, there is the danger of failing to recognize or incorporate important opportunities for new system capabilities. On the other hand, there is the hazard of introducing ill-founded systems into the field forces. The right or best answers to questions can be elusive. The wrong answers, on the other hand, will sooner or later become quite clear. Insofar as the combat developer, the materiel developer, and industry integrate their efforts and view their activities in terms of a common goal, their impact on the security of this country will be positive.

REMARKS OF GENERAL WILLIAM R. RICHARDSON, COMMANDING GENERAL, U.S. ARMY TRAINING AND DOCTRINE COMMAND, FORT MONROE, VA., AT AN INDUSTRY BRIEFING HELD AT USAAVNC, FORT RUCKER, AL., 14 NOVEMBER 1984.

The importance of aviation

The fundamental importance of both aviation and technology in war is apparent. That importance was recognized and made clear by **Douglas MacArthur** in his typically concise and literate style in May of 1931. As Army Chief of Staff, **MacArthur** personally participated in nationwide maneuvers of the Army Air Corps. Prior to joining the forces in the field, he delivered a brief radio address designed to stir public interest in the Army's air activities. The theme of the address was that the history of war is dominated by change.

General MacArthur concluded with these words: "A sure indication of health and virility in military thought is to refuse to be bound down by the limitations of equipment at present in use. We must hold our minds alert and receptive not

WE MUST GO ON . .

(Continued from Page 13)

only to the six-mile ceiling bomber and the mile-a-minute combat car which are already on the military horizon, but to the application of unglimpsed methods and weapons that the engineer, the chemist, and the physicist may provide. The next war will be won in the future, not in the past. We must go on, or we will go under."

The experience of five-and-a-half decades and the accompanying pace of technological change have made it clear that **MacArthur** was right. Less than 25 years ago the helicopter was a slow, underpowered, weather-restricted, and rather fragile aircraft. Today, no other Army weapons system is more responsive to commanders' needs.

Aviation touches every facet of the Army in every type of warfare in every theater. Commanders depend on aviation as a maneuver force, for fire support, for reconnaissance, for command and control, for logistical support for Medevac, and for the electronic warfare capability provided by special electronic mission aircraft.

Aviation reduces distance and terrain as factors in battlefield mobility. It can rapidly mass on the battlefield, conduct deep attacks, and enable commanders to quickly change their course of action and act faster than the enemy can respond. In sum, aviation embodies the initiative and offensive spirit that epitomize the airland battle.

7,500 airframes planned

To strengthen the division and corps commanders' ability to rapidly influence the battle, the Army is expanding its aviation structure up to some 7,500 airframes and over 66,000 personnel. The principal aviation organization of the future will be the Combat Aviation Brigade. In addition to aviation units at corps and higher echelons, almost every Army division will have a combat aviation brigade.

During the last two decades, then, the Army has in most respects been successful in introducing new aviation systems into the inventory. While it might be tempting to recall those past achievements and appeal for our failings to be seen in proportion, we must, as **MacArthur** said, go on. That means identifying gaps in performance and facing up to the fact that our record has not been altogether gratifying. It means, too, reconsidering the assumptions and reexamining the methods on which we have conducted our business.

We are all familiar with the problems associated with the development and fielding of systems: The duration of the acquisition cycle, the quality of the product, cost overruns, contracting deficiences and disincentives, supportability, sustainability, trainability, and the like.

Certainly, these are not new problems. They have been grappled with in the past, and often the efforts have been hampered by resource stringency. The Korean War was fought with World War II weapons because nothing had been produced in the intervening six years which would replace any of them.

The example of the bazooka

In his book entitled "On to Berlin", **General James Gavin** lamented the lack of imagination of those responsible for developing the small bazooka during World War II. The weapon was manufactured in large numbers and placed in the hands of soldiers, even though it would not penetrate the frontplate of the Tiger Tank. While it could have been tested against German tanks captured in North Africa, it never was. And one scientist advising the Army actually resigned because of his conviction that the weapon was too small to be effective.

"More sadly," **Gavin** notes, "the Army still had not obtained a larger bazooka by the time **General MacArthur** sent the first troops to Korea seven years later to meet the Soviet T-34 tanks in the summer of 1950." As a result, an American infantry combat team there was overrun by Soviet armor.

Other problems of other countries from that era still have a familiar ring today. In late 1940 a letter circulated through the War Department based on a report from the U.S. Military Attache in London. The letter reported that one of the factors contributing to the present desperate position of the British was the failure to freeze designs.

"The technical services are never satisfied with anything less than a perfection which is always unobtainable," the author stated. Then he warned that "the best is the enemy of the

WE MUST GO ON . .

By GEN William R. Richardson

good. If we are to avoid the catastrophe of too little and too late, there must be a decision as to production types. Germany has demonstrated that thousands of imperfect tanks on the battlefield are better than scores of perfect tanks on the testing ground."

Today, it's not possible to accept a replay of these episodes from the past. The technology imperative is simply too compelling. During the past decade the Soviets have outspent us in both procurement and research and development at a rate of two-to-one, and there is no sign of their future investments abating. Their massive expenditures have produced a well-documented trend toward qualitative as well as quantitative advantage.

While we have needed seven to ten years to develop and field equipment, they have required only four to five.

Our strategy is predicated on the fact that the U.S. leads the world in technology and that the vigorous application of this leverage is our best insurance not only against technological surprise, but against the need to match the Soviets numerically. We are not going to be able to buy hardware in quantities equal to those of the Soviets.

Technological edge is leverage

Consequently, we must develop advantages in the systems themselves, and in the means and methods of their employment. Those systems must be fielded in a timely fashion. To accomplish this, our national strengths, unique technological capabilities, and ability to apply innovation must be exploited.

Today, the Army is sparing no effort to accelerate the materiel acquisition process and shorten the time between the development of a requirement and the actual fielding of the system. Both TRADOC, which speaks for the soldier in the field, and AMC, which develops materiel, have taken a hard look at the way they do business. Both are streamlining the procedures that slow the rate of modernization.

One initiative we have undertaken at TRADOC is the improvement of the requirements process which specifies performance characteristics of systems based on missions to be performed. In the past that process has been too lengthy and has not always produced the hoped for results. One difficulty has been that requirements have too often reflected the combat developer's ideal desires without taking into account the achievable state of the technological art.

Technological overreaching has led to fluctuating, costly, or unsuccessful developments while foreclosing more realistic alternatives. There is today much closer cooperation and coordination between the technical community at AMC and the requirements community in TRADOC. Requirements are critiqued and modified by joint working groups in order to achieve a workable match between needs and capabilities.

By using joint working groups, limiting requirements documents to four pages, and incorporating automation, we have also cut the requirement document processing and preparation time almost in half.

I'm also convinced that you in industry can help us write our requirements documents. We want you to review our **operational and organizational (O&O)** plans and desired system performance characteristics early-on so that we can merge your expertise while we're still defining our requirements. We want you to critique and challenge our requirements documents, and tell us when they do not make good sense.

(Continued on Page 30)

Q. What similar purchase have more than 12,000 Army Aviators made in the past 15 years?

A. They've purchased AAAA-endorsed flight pay insurance. As an active duty or or as a Reserve Component Army Aviator, don't you think you owe it to yourself to get the basic facts about this coverage which has returned more than $2 million in lost flight pay to claimants?

All it costs is a stamp.

ARMY AVIATION ASSOCIATION

LADD AGENCY, INC.
1 CRESTWOOD ROAD WESTPORT, CONN

Gentlemen:

Please forward me the pertinent details of the AAAA-endorsed flight pay insurance coverage.

☐ I am on flying status with a U.S. Army unit. ☐ I am an AAAA member.
☐ I am a student pilot undergoing Army flight training.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

MY DATE OF BIRTH IS _____

1940'S — L-4

1960'S — UH-1

1980'S — UH-60A

1984 EQUIPMENT ISSUE

ARMY AVIATION — 1942-1984

VOLUME 33 — NO. 12

ARMY AVIATION EQUIPMENT ISSUE

DECEMBER 31, 1984

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PLEASE NOTE
The eight-page centerfold section is a special AAAA insert which may be removed as a simple pullout.

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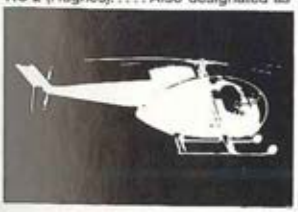
ARMY AIRCRAFT LISTINGS BY POPULAR NAME

FIXED WING AIRCRAFT

ROTARY WING AIRCRAFT



V/STOL, JEEPS, & GEMS

44-yr. aviator Mike Novosel honored with Post Parade on his retirement

CONGRESSIONAL Medal of Honor recipient, **Chief Warrant Officer Michael J. Novosel,** ended 44 years of military service on November 30 at Ft. Rucker, AL.

CW4 Novosel was honored by more than 1,000 participating troops, ten Medal of Honor winners, his family and friends, and a host of dignitaries at his retirement ceremony at the Center Parade Field.

Highlighting the occasion, **MG Bobby J. Maddox,** Ft. Rucker's Commanding General, announced that the street in front of post headquarters, known as Headquarters Road, had been renamed Novosel Street in honor of his multitude of contributions.

A Hall of Famer

Maddox also presented **Novosel** the Army's Distinguished Service Medal for exceptionally meritorious service in positions of great responsibility. A former National Vice President of the AAAA, the 62-year-old aviator was inducted in the Army Aviation Hall of Fame in 1957.

Novosel enlisted in the Army Air Corps in 1941, graduating from flight school and being commissioned a 2LT in 1942. He was one of 462 B-29 aircraft commanders who flew in the covering force over **GEN Douglas MacArthur** as he accepted the Japanese surrender on Sept. 2, 1941, the last mission of WWII.

He later left active duty but was recalled during the Korean War as a Major. Promoted to Lieutenant Colonel in 1955 and requested active duty for the Vietnam War in 1964. When informed that the USAF was overstrength in its senior grades, he accepted an appointment as a Warrant Officer with the Army in September, 1964.

CW4 "MIKE" NOVOSEL, 2D FROM LEFT, IS FLANKED AT DINNER IN HIS HONOR BY BG(P) ELLIS D. PARKER (LEFT), ASST COMDT, USAAVNC; MG JAMES C. SMITH, AAAA PRESIDENT; AND COL NORMAN FERGUSON, PRESIDENT, AAAA'S AVIATION CENTER CHAPTER.

MG BOBBY J. MADDOX, LEFT, USAAVNC CG, PINS THE DISTINGUISHED SERVICE MEDAL ON CW4 MICHAEL J. NOVOSEL DURING HIS RETIREMENT CEREMONY AT FT. RUCKER, AL.

Veteran of three wars

During his distinguished military career **Novosel** saw duty in three wars and was the last active duty military aviator on flight status who flew combat in WWII. He has held positions ranging from bomber pilot to squadron commander to instructor pilot.

His career culminated with his assignment as Senior Training, Advising and Counseling Officer for the WOC Flight Program at Ft. Rucker. **Novosel** and his wife, **Ethel,** will reside in Enterprise, AL. IIIII

1950'S — U-1

1960'S — OV-1

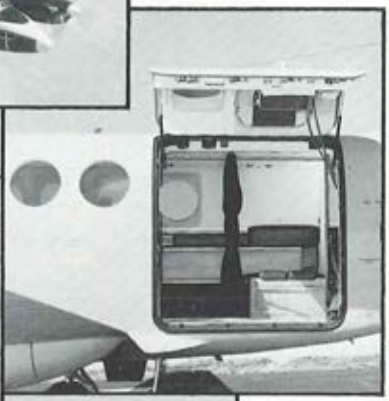
1970'S — C-12

FIXED WING AIRCRAFT

1984 EQUIPMENT ISSUE

C-12D HURON

BELOW: 52 inch wide by 52½ inch high cargo door is C-12 feature



DESCRIPTION: Ten-place pressurized command transport, liaison, and cargo aircraft now utilized by all four branches of the Services.
MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.
POWER PLANT: Two P&W PTA6A-41 turbine engines, 850 shp each.
PROPELLERS: Three-bladed Hartzell full-feathering, reversible propellers.
SPECIFICATIONS: Span: 54 ft, 6 in. Length: 43 ft, 10 in. Height: 14 ft, 6 in. Gross wt: 12,500 lbs. Empty wt: 8,060 lbs. Useful load: 4,391 lbs. Fuel: 544 gal.
PERFORMANCE: Cruising speed (25,000 ft): 280 kts. Economical cruising speed: 275 kts. Stall speed: 80 kts. Service ceiling: 35,000 ft. Max range: 1,755 nm. Rate of climb: 2,400 fpm.
REMARKS: The utility of the "off-the-shelf" C-12 Super King Air is enhanced by the variety of operational takeoff weights ranging from 12,500 to 15,000 pounds and an avionics package which includes all of the necessities plus radar altimeter, color weather radar, complete autopilot system and RNAV. The C-12D has a large cargo door and a high-flotation landing gear which allows comfortable, high speed transport of either bulky cargo or personnel from short, unprepared fields. Its missions range from Photographic Reconnaissance, COMINT, ELINT, Infrared Surveillance, Maritime Surveillance, Atmospheric Sampling, Airways Facilities Inspection to Air Ambulance. A total of more than 270 C-12's are currently being operated in all four Services.

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CV-2 CARIBOU

DESCRIPTION: Medium Tactical Transport (MTT) STOL aircraft with wheel or wheel-skis.
MANUFACTURER: DeHavilland Aircraft of Canada, Limited, Downsview, Ontario.
POWER PLANT: Two Pratt & Whitney R2000-7M2 engines of 1,450 hp each..
PROPELLERS: Hamilton Standard three-bladed, variable pitch metal propellers.
SPECIFICATIONS: Span: 95 ft, 8 in. Length: 72 ft, 7 in. Ht: 3l ft, 9 in. Empty wt: 16,920 lbs. Gross wt: 28,500 lbs. Places: Crew of two and 32 pass., 24 combat-equipped troops, or 14 litters and 8 troops.
PERFORMANCE: Max speed (SL): 216 knots. Cruise speed (SL): 149 knots. Service ceiling: 27,500 ft. Max range: 1,611 n.m. Rate of climb: 1,575 fpm.
REMARKS: Since initial procurement (Nov 1959) and first delivery (Jan 1961), the Army purchased 173 Caribou before releasing them to the USAF in April 1966 under a Army-Air Force agreement. The CV-2's were ferried to Vietnam in 1962 where their excellent short-field performance and three-ton payload served well. DOD later approved ('66) a twin-turbine, wide fuselage program.

CV-7 BUFFALO

DESCRIPTION: Medium Tactical Transport (MTT) STOL aircraft.
MANUFACTURER: DeHavilland Aircraft of Canada, Limited, Downsview, Ontario.
POWER PLANT: Two General Electric T64-10 turbo-prop engines of 2,850 horsepower each.

PROPELLERS: Hamilton Standard three-bladed, reversible pitch metal propellers, 13 feet, 9 inches diameter.
SPECIFICATIONS: Span: 96 feet. Length: 77 feet, 3 inches. Height: 28 feet, 7 inches. Empty weight: 22,864 pounds. Gross weight: 41,000 pounds. Places: Crew of two and 41 passengers (or 35 paratroopers) or 24 litters and 6 troops.
PERFORMANCE: Maximum speed (Sea level): 234 knots. Cruising speed (Sea level): 222 knots. (5,000 feet): 443 knots. Service ceiling: 31,000 feet. Maximum range: 609 nautical miles. Rate of climb: 2,050 feet per minute.
REMARKS: The Buffalo is a larger turbo-prop version of the CV-2 Caribou. Since April, 1965, four prototypes of the CV-7 Buffalo were built under a U.S.-Canadian production-sharing agreement.

L-1 VIGILANT

DESCRIPTION: Two-place metal frame, fabric covered high wing observation and reconnaissance aircraft employed in medical evacuation missions in its litter configuration.
MANUFACTURER: Stinson Division of Consolidated Vultee Aircraft Corporation.
POWER PLANT: One Lycoming R-680-9 radial, 9 cylinder, aircooled engine of 295 horsepower.
PROPELLERS: Hamilton-Standard constant speed, 8 foot, 6 inch diameter.
SPECIFICATIONS: Gross Weight: 3,325 lbs.
PERFORMANCE: Cruise speed (Sea level): 100 knots. Service ceiling: 14,000 feet. Maximum range: 317 nautical miles.
REMARKS: This aircraft was originally designated as the O-49 with its procurement being handled by the Army Air Corps. The Vultee-Stinson entry was the winner of a competition with the Bellanca YO-50 and the Ryan YO-51 Dragonfly. All models (A through F) had flaps and slots. 327 Vigilants were purchased in 1942 to include 142 L-1's, 182 L-1A's, and 3 L-1B ambulance aircraft. An additional 25 were bought in 1943 with 21 L-1D's being converted A's for familiarization in glider training.

L-2 GRASSHOPPER

DESCRIPTION: Two-place metal frame, fabric covered, high wing observation and reconnaissance aircraft.
MANUFACTURER: Taylorcraft.
POWER PLANT: One Continental O-170-3 4 cylinder, direct drive, horizontally opposed, aircooled engine of 65 horsepower.
PROPELLERS: Sensenich two-bladed fixed pitch wooden propeller, 6 foot diameter.
SPECIFICATIONS: Gross Weight: 1,300 lbs.
PERFORMANCE: Cruise speed (Sea level): 84 knots. Service ceiling: 10,050 feet. Maximum range: 305 nautical miles.
REMARKS: Originally designated within the Army Air Forces as the O-57, the aircraft was used by both the AAF and the Army Ground Forces. All models, A through M and excluding "I", had 65 horsepower engines, except the L with its 50 horsepower engine. Procurement included 559 in 1942 (74 L-2's, 476 L-2A's, and one each of the C, D, E, F, G, H, J, K, and L models). 1943 procurement totaled 1,390 aircraft (490 L-2B's and 900 L-2M's). The H, J, K, and L's had side-by-side seating; all other models featured tandem seating.

L-3 GRASSHOPPER

DESCRIPTION: Two-place metal frame, fabric-covered observation and reconnaissance aircraft. Military version of commercial "Challenger." Models ranged from "A" through "J", excluding "I".
MANUFACTURER: Aeronca Mfg. Company.
POWER PLANT: One Continental O-170-3 4 cylinder, direct drive, horizontally opposed, aircooled engine of 65 horsepower.
PROPELLERS: "A" model: Freedman-Burnham ground adjustable, two-bladed propeller with aluminum hub. The "B" & "C" models had a Sensenich fixed pitch wooden propeller.
SPECIFICATIONS: Gross Weight: 1,300 lbs.
PERFORMANCE: Cruise speed (SL): 76 knots. Service ceiling: 7,750 feet. Maximum range: 219 nautical miles.
REMARKS: Used by both AGF and AAF. Originally the O-58, the L-3 was dubbed "Grasshopper" by the Army. All models had

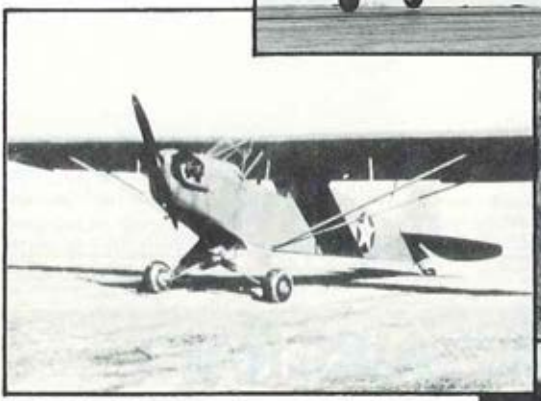
65 horsepower engines; all but the "F" and "G" with side-by-side seating, had tandem seats. 875 "B's" and 490 "C's" were purchased during 1942-1943 with total procurement being 1,465 aircraft.

ADD'L "L" AIRCRAFT

L-7 **Monocoupe..**Manufactured by Universal; powered by a 90 hp O-200-1 Franklin engine. All 19 two-place "A's" purchased in FY 1943 were sent to the ETO.
L-8 **Cadet..**Manufactured by Interstate; powered by a 65 hp O-170-3 Continental engine. Two-place commercial **S-1A Cadet** not used by the AGF; Bolivia bought 8.
L-9 **Voyager..**Manufactured by Stinson; powered by a 90 hp 0-200-1 Franklin engine. The British Navy bought eight three-place L-9A's in FY 42 and also used 12 L-9B's with 4AC-199-E3 engines.
L-10..Manufactured by Ryan Aeronautical; powered by a 145 hp 50-499 Warner engine. Designated as the Ryan **SCW** in 1937, one three-place L-10 was leased in FY 42.
L-11.. Manufactured by Bellanca as the six-place 31-50. Powered by a 600 hp R-1340-41 Pratt & Whitney engine. One leased.
L-12 **Reliant..** Manufactured by Stinson as the **SR-5A** ("A" model) and the **SM-7b** ("B" model.) Two L-12's with a 300 hp R-680-9 Lycoming engine and two L-12A's with 300 hp R-985-A P&W engines were purchased by the AFF in FY 44 as four-place trainers.
L-18.. Manufactured by Piper as **Cub 95;** powered by a 90 hp 0-205-1 Continental engine. First purchased in FY 49 with the bulk of a 1,043 buy (105 "B's" and 938 "C's") being obtained by Turkey and a small number utilized by Army flying clubs.
L-22 **Super Navion..**Manufactured by Ryan Aeronautical; Only three aircraft carried this designation. Redesignated as **XL-17D's.**
L-25..Manufactured by McDonnell Aircraft; only aircraft to carry three designations; also known as the **XV-1** and **XH-35.**
L-27...Manufactured by Cessna Aircraft as its commercial **Model 310** twin-engine aircraft and used within the USAF. No Army procurement of this model.

L-4 CUB

BELOW: An L-4 on the deck



LEFT: The L-4 is hand propped

DESCRIPTION: Two-place metal frame, fabric-covered, high wing observation/liaison aircraft.
MANUFACTURER: Piper Aircraft Corporation, Lock Haven, Pennsylvania.
POWER PLANT: One Continental 0-170-3 piston engine of 65 horsepower.
PROPELLERS: Sensenich fixed pitch, two bladed wooden propeller.
SPECIFICATIONS: Span: 35 feet, 4 inches. Length: 22 feet, 4 inches. Height: 6 feet, 7 inches. Empty weight: 658 pounds. Gross weight: l,220 pounds.
PERFORMANCE: Maximum speed (Sea level): 76 knots. Cruising speed (Sea level): 66 knots. Stalling speed: 60 knots. Service ceiling: 9,300 ft. Maximum range: 219 n.m..
REMARKS: From initial '42 procurement until '45, the Army rec'd 5,671 L-4's. Ten models were purchased, ranging from the "A" (948 purchased) through the "J" (1,680 units). 981 "B's" and 1,801 "H's" were other major buys. All had tandem seating, except the E and F. They also had a 75 hp Continental engine; three-places, one in front, two in back; and were used for pre-glider training. "G" had a 100 hp Lycoming engine. "H" was a "B" with a fixed pitch prop and a 65 hp Lycoming engine; the "J" was an "H" with a controllable pitch propeller. While the L-2, L-3, and L-4 were all called "Grasshoppers", the name "Cub" stuck to the L-4. It was also called the "Maytag Messerschmidt."

L-5 SENTINEL

DESCRIPTION: Two-place metal frame, fabric covered high wing observation-reconnaissance and medical evacuation aircraft used by the AAF, AGF, and the Navy. Originally the O-62, the models ranged from "A" to "G", excluding "D."
MANUFACTURER: Stinson Division of the Consolidated Vultee Aircraft Corporation.
POWER PLANT: One Lycoming O-435-I engine of 185 horsepower.
PROPELLERS: Sensenich fixed pitch, two-bladed wooden propeller, 7 feet, 1 inch diameter.
SPECIFICATIONS: Aircraft Gross weight: 2,020 pounds.
PERFORMANCE: Cruising speed (Sea level): 87 knots. Service ceiling: 15,800 feet. Maximum range: 483 nautical miles.
REMARKS: Army L- Pilots operated the L-5 from 1945 through the first months of the Korean hostilities. The "drop" rear seat permitted cargo or litter carrying. A total of 2,272 L-5's were purchased between 1942—1945 (2,419 L-5 and L-5A's in 1942) (679 "B's" in 1943) (300 "C's", 558 "E's", and one "F" in 1944) (115 "G's" in 1945.)

L-6

DESCRIPTION: Two-place metal frame, high wing observation and reconnaissance aircraft.
MANUFACTURER: Interstate.
POWER PLANT: One air-cooled Franklin O-200-5 engine of 102 horsepower.
PROPELLERS: U.S. Propeller fixed pitch, two-bladed propeller of 6 feet, 4 inches diameter.
SPECIFICATIONS: The aircraft's gross weight totaled 1,650 pounds.
PERFORMANCE: Cruising speed (Sea level): 76 knots. Service ceiling: 12,100 feet. Maximum range: 796 nautical miles.
REMARKS: This fabric-covered aircraft was sold commercially as the Interstate S-1B Cadet. Its original Army Air Corps military designation was the O-63. One XL-6 Interstate Cadet was procured in 1942 with an additional 250 of the aircraft being purchased by the government in 1943.

WE MUST GO ON . .

(Continued from Page 15)

TRADOC is also seeking commercial off-the-shelf items that represent an 80 to 90% solution now, rather than asking AMC to engage in a time-consuming R & D effort to gain the final 10% of capability. By accepting nondevelopmental items, we obtain stae-of-the-art technology, pay no direct R & D costs, and put new systems into the soldier's hands quickly.

When we cannot find exactly what we need from the menu available in the marketplace, we will consider modifying NDI. As **General Dick Thompson** has said, our goal is to "find the optimum point on the acquisition spectrum that provides the quickest and most economical way to meet the requirement."

The **quick reaction program (QWP)** acquisition process currently in use at Ft. Lewis by ADEA in the 9th Infantry Division holds out the promise of expediting fielding. Requirements are stated on a single quick reaction program document, which is written in ROC format but with abridged supporting annexes. The QRP relies on proven technology which provides quick, effective, reliable solutions to 9th Division needs.

Should a system have total force applicability, the QRPD is converted to a traditional requirements document. The system has tremendous potential, and we're looking at how it might be more widely applied. We're pushing to use the QRDP, not only as a document used in lieu of the ROC, but to obviate the need for a COEA, a requirement in AR 71-9 that we have oversubscribed to, to the Army's disadvantage.

Military-Industry interchanges

Finally, TRADOC is taking its case to industry. Various forums provide the opportunity to convey how we'll actually fight and tell you about deficiencies that need correcting. TRADOC has made its mission area analyses and current battlefield development plan available to you in industry.

We also provide draft requirements documents, letters of agreement, and **operational and organizational (O&O) plans,** and have sought and obtained relief from an earlier proviso that made it necessary to have an active Army contract to qualify for receipt of those documents.

At AMC **General Thompson** is emphasizing the need to compress the acquisition cycle through innovative program management. He has established the goal of getting all new equipment starts into production within four years after Milestone I whenever the program decision is made with funds in place. Product improvement programs and other programs that integrate proven components into a new system will reach production within two years. We're with him 100% in this regard.

AMC is improving the effectiveness of the Army Laboratory System. The roles and missions of the labs have been clarified and their programs synchronized with operational concepts. They're being given the funds and flexibility needed to aggressively pursue new technology. Through up front marketing efforts, they will respond to customer needs as they see them, and apply technology to fill those needs.

A clear call for help

Clearly, without the understanding and active participation of industry, progress will be limited. There are specific areas where we need your help.

First, we want your help in fielding **total systems.** In the past both the Army and industry have been excessively preoccupied with the technological sophistication of the higher visibility end item. What TRADOC must do is to tell you what we want in areas such as training devices, operational readiness, sustainability and maintainability at the same time that we tell you what we want in the major end item.

Having done the research and developed the item of equipment, you are uniquely qualified to assist us in defining the total system. You must help us identify the requirements for devices and simulators, tools and test equipment, logistical support, spare parts stockage levels, and publications. We owe it to the field to do it all, and at the same time.

We also need to capitalize on our technological edge. Those of you in industry as well as those in the AMC labs will be the first to recognize technology breakthroughs that have the potential to offer a battlefield advantage.

Be sensitive to these opportunities and lay out for us the manner through which they can be ex-

ploited. Our leads in the laboratory must be translated to a lead in the field. At the same time, take care to discriminate between a genuine breakthrough and technological gadgetry. We need the former, but we cannot afford the latter. Be realistic in telling us when the technology will mature so that we can properly plan for its orderly introduction into the force.

While we need to leap ahead through the application of technology, we also need to upgrade existing equipment. Given current budgetary limitations, the life of fielded systems must be maximized. Product improvement by technology insertion offers great promise. The CH-47 CHINOOK, for example, was designed in the 1950's and fielded in 1962. The 1975 modernization program not only improved the reliability, maintainability, and survivability of the CH-47, but extended the useful life of the fleet beyond the year 2000.

I ask that you look upon all fielded systems in this same way. For those of you who have systems currently fielded, consider improving them, introducing new technology, and extending the life of the system. But of course innovative technology from any source has a place on any weapon system as we seek the vital edge on the battlefield.

Cost drivers and tradeoffs

We need you to identify for us the cost drivers and tradeoffs. Too often in the past, we have experienced inordinately escalating costs in weapons procurement after the program was well underway, because of your attempt to develop everything we asked for. This takes too much time and wastes dollars. We can't afford to make a good system better—indefinitely. Soldiers need good systems in their hands **now** rather than "best" systems later.

We can also ill afford the impact of schedule slips. Since the pipeline can't be turned on or off, we end up with valuable manpower and training facilities sitting idle. Skilled soldiers wait for a system. New recruits who signed an enlistment contract to crew or maintain the weapon may have to wait 6-12 months. Part of the blame is the Army's, because we place unrealistic demands on you with respect to schedule and cost. When we do, tell us, but do it up front.

The final area where I urge you to help is with basic research. After World War II it was said

WE MUST GO ON . .

By GEN William R. Richardson

that the relationship between research and system production was like a savings bank: one made deposits in the form of fundamental research during peacetime and took withdrawals in the form of systems during war. If you go bankrupt, God help you, though sometimes you can get away with an overdraft. I question whether we could sustain an overdraft today.

Certainly the private enterprise system was not built on charity, and I understand your concern that there is marginal return on money invested in basic research. We'll do our part to identify the areas where your research can result in potential payoffs. But I also believe that the defense business must to some extent rise above hard-nosed, profit-oriented, utilitarianism. It must remember that the nation's security will be only as good as each of us make it — and have the courage to invest the research dollars that will lead to needed breakthroughs. I'm convinced that you can do this job and my challenge to give you the chaarter.

The time is now!

It is obvious that many of these points have been made before. My chief reason for bringing them together on this occasion is that the moment is propitious for a concerted effort to bring about vast improvement in developing and acquiring systems.

Players in the process from across TRADOC, AMC, and industry are aroused. There is a demand from many quarters for greater effectiveness. The pressures of increasing security threats and of economic constraints force a reconsideration of current practices. Impatience with slow and inefficient programs make possible reforms which perhaps could not have been introduced in the past.

If change is to be successful, however, it must be undertaken on a wide front. Introducing innovation sporadically or in widely scattered ways will not achieve the goals we must attain. Army Aviation and the aviation industry must create and maintain a vibrant partnership. As **General MacArthur** said, we must go on, or we will go under. Today, the Army and industry must go on together. IIIIII

L-13

DESCRIPTION: Three-place, all-metal, high wing observation and reconaissance aircraft capable of fulfilling the medical evacuation mission.
MANUFACTURER: Stinson Division of the Consolidated Vultee Aircraft Corporation.
POWER PLANT: One air-cooled Franklin XO-425-5 engine of 245 horsepower.
PROPELLERS: Two-bladed, variable pitch propeller of 8 feet, 6 inch diameter.
SPECIFICATIONS: The aircraft had a gross weight of 2,900 pounds.
PERFORMANCE: Cruising speed (Sea level): 93 knots. Service ceiling: 15,000 feet. Maximum range: 562 nautical miles.
REMARKS: Although the Army Ground Forces tested two of these aircraft in 1945, the L-13 was not accepted at that time. Later, the Army Ground Forces procured the L-13 model and by June, 1951, there were 43 of this aircraft in the Army inventory. The L-13 could carry two litters in place of the rear passenger seats. The production prototypes of the L-13 aircraft had folding wings, but this particular model was not procured for use by the Army.

L-14

DESCRIPTION: Three-place, metal frame, fabric-covered observation and reconnaissance aircraft capable of fulfilling medical evacuation missions.
MANUFACTURER: Piper Aircraft Corporation of Lock Haven, Pennsylvania.
POWER PLANT: One Lycoming O-290-3 piston engine of 130 horsepower.
PROPELLERS: Sensenich two-bladed model 76 JB 44 propeller.
SPECIFICATIONS: Span: 35 feet, 10 inches. Length: 23 feet, 3 inches. Height: 7 feet. Empty weight: 1,100 pounds. Gross weight: 1,800 pounds.
PERFORMANCE: Maximum speed (Sea level): 117 knots. Cruising speed (Sea level): 104 knots. Service ceiling: 14,500 feet. Maximum range: 397 n.m. Endurance: 3.5 hours.
REMARKS: The Army Ground Forces procured five L-14's and cancelled an order for 845 more on VJ Day. The airplane had long landing gear, a litter-carrying configuration (over the rear seat and into the rear fuselage), and exceptional all-around visibility through the plexiglass 'birdhouse' in which the pilot sat.

L-15 SCOUT

DESCRIPTION: Two-place all-metal, high wing observation and reconnaissance aircraft with tricycle landing gear.
MANUFACTURER: TheBoeing Airplane Co.
POWER PLANT: One Lycoming O-290-7 engine of 125 horsepower.
PROPELLERS: Two-bladed, variable pitch propeller.
SPECIFICATIONS: The aircraft had a gross weight of 2,216 lbs.
PERFORMANCE: Cruising speed (Sea level): 75 knots. Service ceiling: 12,500 feet. Maximum range: 250 nautical miles.
REMARKS: This was a production prototype that was never produced in quantity. Twelve YL-15 aircraft were procured by the Army Ground Forces between 1947 and 1949 for service and evaluation tests only. The YL-15's were later utilized in Alaska by the Forestry Service. The Boeing-built L-15 Scout used spoilers instead of ailerons and full flaps. With its high wing and elevated tail boom, the L-15's observer was seated backwards and had a full panoramic downward view unobstructed by the normal tail structure of most observation aircraft.

L-16

DESCRIPTION: Two-place, metal frame, fabric-covered observation and reconnaissance aircraft.
MANUFACTURER: Aeronca Manufacturing Company.
POWER PLANT: One Continental O-190-1 engine of 95 horsepower.
PROPELLERS: McCauley fixed pitch, two-bladed metal propeller of 6 feet, 1 inch diameter.
SPECIFICATIONS: The aircraft had a gross weight of 1,300 lbs.
PERFORMANCE: Cruising speed (Sea level): 71 knots. Service ceiling: 14,500 feet. Maximum range: 405 nautical miles.
REMARKS: This tandem-seating L-16 aircraft was the military version of the Aeronca "Champion", and was the most inexpensive aircraft ever purchased by the military. The initial date of Army procurement was in 1948, with a total of 742 L-16A's eventually-being delivered. There were 61 "B" Models through June 1948. The L-16 was used extensively in the early part of the Korean conflict in 1950, and a large number were also used in the Civil Air Patrol in the mid-'50's.

L-17 NAVION

DESCRIPTION: Four-place all-metal, low wing utility and liaison aircraft with fully-retractable landing gear.
MANUFACTURER: Ryan Aeronautical Company (L-17A). North American Aviation manufactured the "B" and "C" models of the L-17.
POWER PLANT: One Continental O-470-7 engine of 185 horsepower ("A" Model); 205 horsepwer ("B" and "C" Models).
PROPELLERS: Hartzell two-bladed, variable pitch metal or plastic propeller, of 7 foot diameter.
SPECIFICATIONS: Gross weight: 3,050 lbs.
PERFORMANCE: Cruising speed (Sea level): 106 knots. Service ceiling: 10,900 feet. Maximum range: 681 nautical miles.
REMARKS: Three models of the L-17 were procured by the Army. The "A" models were first purchased in FY 1947 with the inventory high point of 42 being reached by 1951. The "B" and "C" models had 205 horsepower engines and were purchased in FY 1949 with 196 "B's" and 35 "C's" being inventory highs in June 1949. The L-17 Navions were turned over to Army flying clubs on being phased out of service.

L-21 SUPER CUB

DESCRIPTION: Two-place observation and liaison aircraft.
MANUFACTURER: Piper Aircraft Corporation, Lock Haven, Pennsylvannia.
POWER PLANT: One Lycoming O-290-D piston engine of 125 horsepower.
PROPELLERS: Sensenich fixed pitch, two-bladed metal propeller.
SPECIFICATIONS: Span: 35 feet, 4 inches. Length: 22 feet, 3 inches. Height: 6 feet, 8 inches. Empty weight: 935 pounds. Gross weight: 1,500 pounds.
PERFORMANCE: Maximum speed (Sea level): 105 knots. Cruising speed (Sea level): 96 knots. Service ceiling: 16,000 feet. Maximum range: 345 nautical miles. Rate of climb: 1,000 feet per minute.
REMARKS: Since its initial delivery date in 1951, the Army procured 150 "A" models and 69 "B" models. This metal-frame, fabric-covered airplane was used mainly as a trainer. The "B" model saw extensive use in the Far East with leased aircraft being used in SFT by Reservists. The L-18C, used in MDAP, was the same as the L-21 except that it had a 90 horsepower Continental engine.

L-25 (XV-1, H-35)

DESCRIPTION: Four-place experimental convertiplane.
MANUFACTURER: McDonnell Aircraft Corporation, St. Louis, Missouri.
POWER PLANT: One Continental R-975-19 engine of 550 horsepower.
ROTOR SYSTEM: Single three-bladed rotor and two-bladed pusher propeller.
SPECIFICATIONS: Empty weight: 4,277 pounds. Gross weight: 5,505 pounds.
PERFORMANCE: Maximum speed (Sea level): 171 knots. Service ceiling: 11,800 feet. Maximum range: 414 nautical miles.
REMARKS: The Army procured two L-25 aircraft in FY 1954 from McDonnell Aircraft for state-of-the-art research and evaluation. This was the only aircraft ever given three separate designations. The Army originally called this aircraft the XH-35 while the USAF referred to the convertiplane as the XL-25 with the XV-1 being the compromise designation. The twin boom aircraft had a greenhouse-type cockpit and stressed skids. The XV-1 was followed by the XV-2 (Sikorsky) convertiplane (design study only) and the XV-3 (Bell) which achieved in-flight conversion.

LC-126

DESCRIPTION: Four-place utility airplane.
MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.
POWER PLANT: One Jacobs R-755-11 direct drive engine of 300 horsepower.
PROPELLERS: Hamilton Standard constant speed metal propeller, 7 ft, 9 in diameter.
SPECIFICATIONS: Span: 36 feet, 2 inches. Length: 27 feet, 4 inches. Height: 8 feet, 3.5 inches. Empty weight: 2,250 pounds. Gross weight: 3,350 pounds.
PERFORMANCE: Maximum speed (Sea level): 158 knots. Cruising speed (Sea level): 118 knots. Service ceiling: 19,800 feet. Maximum range: 1,036 nautical miles. Endurance: 4 hours. Rate of climb: 1,200 feet per minute.
REMARKS: In 1950, five LC-126B's were purchased by the USAF for the Army National Guard. The Army issued a contract in 1952 for 63 LC-126C's for use in such varied missions as search and rescue, light cargo transport, and instrument training. The maximum inventory totals for the aircraft were eight "A's", five "B's", and 64 "C's",dropping to nine aircraft by January 1962.

O-1 BIRD DOG

LEFT: A specially-rigged O-1 Bird Dog is ready to drop two 82d Abn troopers.

BELOW: A float-equipped O-1 on a Panama mission.

DESCRIPTION: Two-place all-metal, high wing observation, reconnaissance, and liaison aircraft with tandem seating.
MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.
POWER PLANT: One Continental O-470-11 piston engine rated at 213 horsepower.
PROPELLERS: McCauley fixed pitch, two-bladed metal propeller.
SPECIFICATIONS: Span: 36 ft. Length: 25 ft, 10 in. Height: 7 ft, 4 in. Empty wt: 1,614 lbs. Gross wt: 2,430 lbs. Fuel: 40 gal. Flaps, fixed landing gear.
PERFORMANCE: Max speed (SL): 101 knots. Cruising speed (SL): 100 knots. 170 knots. Stalling speed: 86 knots. Service ceiling: 18,500 ft. Max range: 681 n.m. Endurance: 4.67 hours. Rate of climb: 1,040 fpm.
REMARKS: Developed for the Army after WW II, the Bird Dog (originally designated by the Army as the L-19) was Cessna's winning design competition entry in April 1950. The Army accepted some 3,430 O-1A's and E's by March 1964 with the USMC using O-1B's and O-1C's. Later, the USAF utilized F's and G's in Vietnam for forward air controller missions. Nineteen other countries also purchased this versatile aircraft. The structurally stronger TO-1D served as the Army's instrument trainer version in having a variable pitch propeller and an instrument panel in the rear. The latter could be enclosed for hooded flight.

U-8D/F SEMINOLE

LEFT: RU-8D with APS-85 Radar

BELOW: RU-8D Wine bottle Configuration

DESCRIPTION: Six-place all-metal, low-wing high performance, all-weather courier and personnel transport with retractable tricycle landing gear. Convertible to a medevac ambulance, pilot trainer, or cargo hauler.
MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.
POWER PLANT: Two Lycoming GSO-480-I engines rated at 340 horsepower each, supercharged for high altitude flight.
PROPELLERS: Hartzell three-bladed, all-metal featherable propellers.
SPECIFICATIONS ("F"): Span: 45 ft, 10.4 in. Length: 33 ft, 4 in. Height: 11 ft, 6½ in. Empty wt: 5,112 lbs; gross wt: 7,700 lbs.
PERFORMANCE: Max speed (SL): 186 knots. Cruise speed (10,000 ft): 157 knots. Service ceiling: 27,000 ft. Max range: 1,519 n.m. Endurance: 8.36 hrs. Rate of climb: 1,300 feet per minute.
REMARKS: The U-8D (originally the L-23) is the military version of the Beechcraft Model 50 Twin-Bonanza with the "F" being a Beechcraft 65 Queen Air. 358 Seminoles were purchased during 1952-1962. Three production and 68 production U-8Fs were delivered starting in January 1962. The NU-8F, a turbine-powered, unpressurized U-8F (two Pratt & Whitney PT6A-6 turbine engines rated at 550 shaft horsepower each) was procured by the Army in 1964. Its increased speed, higher useful load, and greater range made it a welcome addition to the Army fleet.


9
ARMY


U.S.ARMY
ARMY

OV-1 MOHAWK

LEFT: OV-1 Mohawk equipped with SLAR

DESCRIPTION: Two-place observation and reconnaissance aircraft.
MANUFACTURER: Grumman Aerospace, Old Bethpage, Long Island, New York.
POWER PLANT: Two Lycoming T53-L-701 turboprop engines, 1,400 shaft horsepower each.
PROPELLERS: Hamilton-Standard three-bladed reversing & feathering, 10 ft. diam.
SPECIFICATIONS: Span: 48 ft. Length: 41 ft. Length (with SLAR antenna): 43 ft. Height: 13 ft. Empty wt: 11,800 lbs. Fuel: 1,930 lbs; Two 150-gallon drop tanks: 2,368 lbs.
PERFORMANCE: Maximum speed (SL): 285 knots, (IR/photo). Cruise (SL): 210 knots. Service ceiling (80% fuel): 25,000 ft. Range (w/drop tanks): 890 n.m. (IR/photo).
REMARKS: The OV-1 was first purchased as the AO-1 in September 1960. The "A" utilized two 960 hp Lycoming T-53-L3 turboprop engines; a 1,100 hp T-53-L7 was installed in the "B" model in 1963. Designed to operate from small unimproved fields in the forward battle area, the "D" is deceptively similar to earlier versions but rapid configuration procedures enable a single OV-1D to perform the surveillance functions of any previous Mohawk. Capable of daylight, darkness, and inclement weather operations, the 'D' has a more accurate inertial navigation system, improved infrared and radar performance with automatic data annotation of imagery, three photographic systems that include a vertical and oblique firing camera and two panoramic cameras that provide vertical and horizontal terrain coverage horizon to horizon, a radiological monitoring system, and ECM equipment to assure mission success.

T-37

DESCRIPTION: Two-place, side-by-side off-the-shelf jet trainer.
MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.
POWER PLANT: Two Continental J-69-T-9 turbojets developing 1,840 pounds thrust.
SPECIFICATIONS: Span: 33 feet, 8 inches. Length: 29 feet, 2 inches. Height: 9 feet, 1 inch. Gross weight: 6,600 pounds. Empty weight: 4,076 pounds.
PERFORMANCE: Maximum speed (10,000 feet): 355 knots at military power, 21,730 rpm. Cruising speed (25,000): 279 knots at normal rated power, 20,700 rpm. Service ceiling: 35,000 feet. Maximum range: 607 nautical miles. Endurance: 2.8 hours. Rate of climb (Sea level): 3,200 feet per minute.
REMARKS: This aircraft was procured by the USAF as a primary jet trainer. Three T-37's were loaned to the Army in 1958 for Project LONG ARM for the purpose of evaluating the use of high speed, high performance aircraft for long range artillery adjustment and observation as well as low altitude, high speed flight. More than 900 were built for the USAF and other nations.

G-91

DESCRIPTION: One-place high performance tactical reconnaissance jet fighter evaluated for use by the USA Aviation Test Board as an observation aircraft.
MANUFACTURER: Built for the NATO Forces by the Fiat Aviation Division of Turin, Italy.

POWER PLANT: Bristol-Siddeley Orpheus MK 803 axial flow turbojet engine of 4,078 pounds thrust each with after-burner. 5,000 pounds of rated sea level static thrust.
SPECIFICATIONS: Span: 29 feet. Length: 39 feet, 3 inches. Height: 14 feet, 5 inches. Empty weight: 8,380 pounds. Gross weight: 19,070 pounds.
PERFORMANCE: Maximum speed (Sea level): (G-91R) 603 knots, (G-91Y) 605 knots. Operational ceiling: 27,600 feet.
REMARKS: In 1961, the Army received the loan of three of these NATO fighters to be used for test and evaluation as a high speed, high performance observation aircraft. Testing was discontinued after two of these jets were lost in separate accidents. The G-91T was a two-place tandem-seating trainer version.

T-41B MESCALERO

DESCRIPTION: Four-place, all-metal, high wing single engine primary trainer.
MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.
POWER PLANT: One Continental IO-360-D piston engine of 210 horsepower.
PROPELLERS: One McCauley two-bladed, constant speed propeller. 6 ft., 4 in. dia.
SPECIFICATIONS: 35 feet, 10 inches. Length: 26 feet, 11 inches. Height: 8 feet, 11 inches. Gross weight: 2,300 pounds. Empty weight: 1,255 pounds.
PERFORMANCE: Maximum speed (Sea level): 134 knots. Cruising speed (5,500 feet): 130 knots per hour. Service ceiling: 17,500 feet. Normal range (5,500 feet): 582 nautical miles. Maximum range (10,000 feet): 920 nautical miles. Takeoff, sod runway: 635 feet. Landing, sod: 400 feet. Fuel: 52 U.S. gallons. Rate of climb: 910 feet per minute.
REMARKS: An off-the-shelf Cessna Model 172, 255 T-41B's were delivered through

March, 1967 under a $4 million contract. With extensive nav-com equipment for student-instructor usage, the T-41 released the O-1 Bird Dog, then the Army's primary trainer, for other support missions.

T-42A

DESCRIPTION: Four-place off-the-shelf dual intrumented, all-weather instrument and transition trainer.
MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.
POWER PLANT: Two Continental IO-470-L fuel injection engines rated at 260 horsepower each.
PROPELLERS: McCauley constant speed, full-feathering two-bladed metal propellers, 6 feet, 6 inches diameter.
SPECIFICATIONS: Span: 37.9 feet. Length: 27.3 feet. Height: 9.6 feet. Empty weight: 3,423 pounds. Gross weight: 5,100 pounds.
PERFORMANCE: Maximum speed (Sea level): 134 knots. Cruising speed, 65 percent (Sea level): 175 knots. Service ceiling: 19,700 feet. Absolute ceiling: 21,000 feet. Maximum range: 1,226 nautical miles (with 45 minute reserve). Endurance: 7.5 hours. Rate of climb: 1,670 feet per minute.
REMARKS: Commercially known as the Beechcraft B55 Baron, the T-42A was first purchased in '65 becoming one of the Army's most active trainers. Additional T-42's were flown to Turkey by US Army pilots under a Military Assistance Program.

U-1A OTTER

DESCRIPTION: Eleven-place all-metal, high wing utility STOL aircraft.
MANUFACTURER: DeHavilland Aircraft of Canada, Ltd., Downsview, Ontario, Canada.
POWER PLANT: One Pratt & Whitney R-1340-59 piston engine of developing 600 horsepower.
PROPELLERS: Hamilton Standard three-bladed, variable pitch metal propeller.
SPECIFICATIONS: Span: 58 feet. Length: 41 feet, 10 inches. Height: 12 feet, 7 inches. Empty weight: 4,431 pounds. Gross weight: 8,000 pounds.. Fuel: 216 gallons.
PERFORMANCE: Maximum speed (Sea level): 134 knots. Cruising speed (Sea level): 105 knots. (5,000 feet): 121 knots. Service ceiling: 17,400 feet. Absolute ceiling: 20,5000 feet. Cruising range: 667 nautical miles. Rate of climb: 735 feet per minute. Endurance at cruise power: 6.9 hours.
REMARKS: Since the intial procurement in March 1955, the LArmy has purchased 205 Otters. Described as an "airborne one ton truck," the U-1A is one of the few service aircraft to retain its original designation. It employs wheels, skis, wheel-skis, and floats in filling Arctic, tropic, and normal missions.

U-6 BEAVER

DESCRIPTION: Six-place, all-metal, high wing general utility aircraft with non-retractable gear. Originally the Army L-20; Off-the-shelf commercial DHC-2.
MANUFACTURER: DeHavilland Aircraft of Canada, Limited, Downsview, Ontario.

POWER PLANT: One Pratt & Whitney R-985 AN-1 engine of 450 horsepower.
PROPELLERS: Hamilton Standard two-bladed, variable pitch metal propeller.
SPECIFICATIONS: Span: 48 ft. Length: 30 ft, 4 in. Height: 9 ft. Empty wt: 3,000 lbs. Gross wt: 5,100 lbs.
PERFORMANCE: Max speed (SL): 136 knots. Cruise speed (SL): 110 knots. Service ceiling: 18,000 ft. Max range (5,000 ft): 794 n.m. Endurance: 8 hours. Rate of climb: 850 fpm.
REMARKS: Operable on wheels, floats, skis, or with a wheel-ski combination, the L-20 was designed for Canada's "bush" country, its high wing allowing easy mooring at lakeside docks. Its Army missions included transporting and air-dropping personnel and supplies, wire laying, courier services, med evacuation, and command transport. 968 U-6s in all were delivered to the Army.

Our demonstrator engine for the LHX is running and sized right for the Army's requirement.

On August 2, 1984, our 1200 shp class TSE109 turboshaft demonstrator engine ran for the first time.

It met or exceeded every performance goal set for its first test series.

This important step for the Army's LHX engine requirement gives strong proof of our commitment to offer the latest in engine technology at the lowest risk.

The Garrett Turbine Engine Company and the Allison Gas Turbine Division of General Motors have agreed to form an affiliation to bid for the development of the Army's LHX power plant.

This landmark approach assures the U.S. Army of advanced technology, recognized expertise in rotorcraft propulsion integration, and competitive production to reduce cost throughout the life of the program.

Our combined offering will be called the ATE109 (Advanced Technology Engine), and will provide the lowest development risk of any engine proposed. That's because it shares virtually the same power section with Garrett's F109 turbofan trainer engine and will incorporate Allison's proven ATDE technology.

The F109 power section has already undergone 1700 hours of rigorous testing and by LHX contract award will have been factory and altitude tested for over 4000 hours. In addition, Allison has met or exceeded all of the Army's goals for advanced helicopter engines during the recently completed ATDE program.

The ATE109 also will set new military standards for durability, performance and safety. Because this advanced turboshaft meets the stringent Engine Structural Integrity Program (ENSIP), which is now being considered for all future U.S. Army engines.

For detailed information, contact: Propulsion Engine Sales, Garrett Turbine Engine Company, P.O. Box 5217, Phoenix, Arizona 85010. (602) 231-1037.

GARRETT

The Garrett Corporation
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U-9 AERO COMMANDER

DESCRIPTION: Five-place all-metal, high-wing, utility, command, and liaison aircraft. Originally designated as the Army L-26 (Models B through D, excluding A). Off-the-shelf-version of the commercial Model 520.

MANUFACTURER: Aero Design and Engineering Co., Bethany, Oklahoma (Later North American Rockwell Corporation).
POWER PLANT: Two Lycoming GO-480-1 piston engines of 260 hp (YL-26); 270 hp (L-26B); 320 horsepower (C, D, and E models).
PROPELLERS: Hartzell three-bladed variable pitch, metal propellers.
SPECIFICATIONS: Span: 49 ft, 6 in. Length: 35 ft, 1¼ in. Height: 14 ft, 9½ in. Empty wt: 4,475 lbs. Gross wt: 6,750 lbs. Fuel: 156 gal.
PERFORMANCE: Max speed (SL): 186 knots. Cruise speed (SL): 159 knots. Service ceiling 21,000 ft. Max range: 1,464 n.m. Rate of climb: 1,525 fpm.
REMARKS: The first U-9 (YL-26) was obtained by the Army in 1953. Some seven 260 hp U-9's, one 270 hp "B", four 320 hp "C", 3 "D's" similar to the "C", and five RL-26's (SLAR-carriers) were purchased in '53-'59 with only nine remaining by January 1962.

U-10 HELIO COURIER

DESCRIPTION: Six-place all-metal, high wing short takeoff and landing utility aircraft.
MANUFACTURER: Helio Aircraft Corporation, Bedford, Massachusetts.

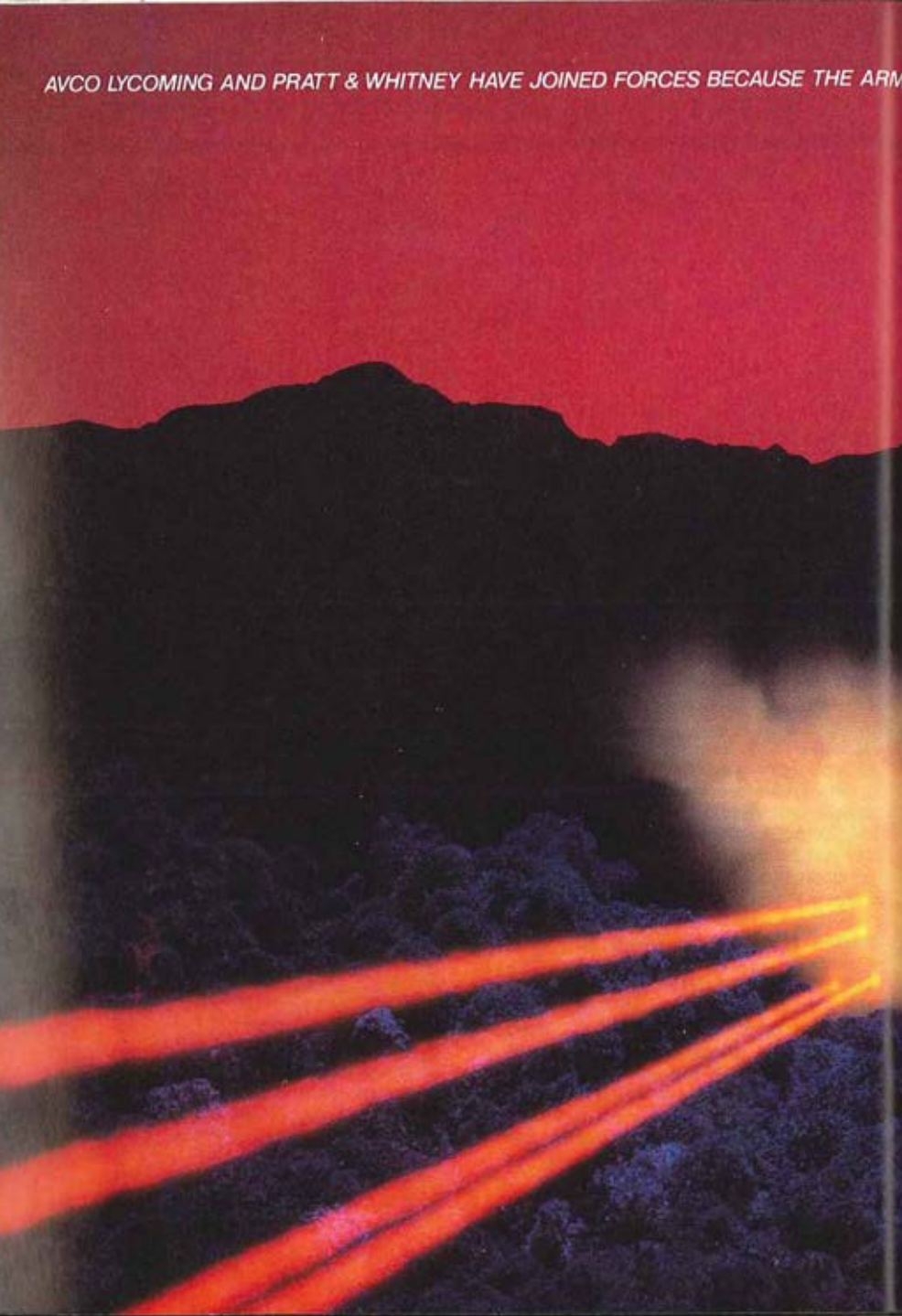
POWER PLANT: One Lycoming GO-480-G1D6 engine developing 295 horsepower.
PROPELLERS: Hartzell three-bladed, constant-speed propeller, 8 feet diameter.
SPECIFICATIONS: Span: 39 feet. Length: 31 feet. Height: 8 feet, 10 inches. Empty weight: 2,037 pounds. Gross weight: 3,600 pounds.
PERFORMANCE: Maximum speed (Sea level): 149 knots. Cruising speed (Sea level): 132 knots. (10,000 feet): 144 knots. Service ceiling: 16,500 feet. Maximum range: 1,267 nautical miles. Endurance: 14 hours. Rate of climb: 1,125 feet per minute.
REMARKS: Originally designated the L-24, the commercial Helio-Courier H-395 was purchased "off-the-shelf" in 1963 by the U.S. Army for operational testing and evaluation. Twenty U-10's were procured through Fiscal Year 1965 for use by the Army's Special Forces Groups. The L-28 was the USAF version of the Helio Courier.

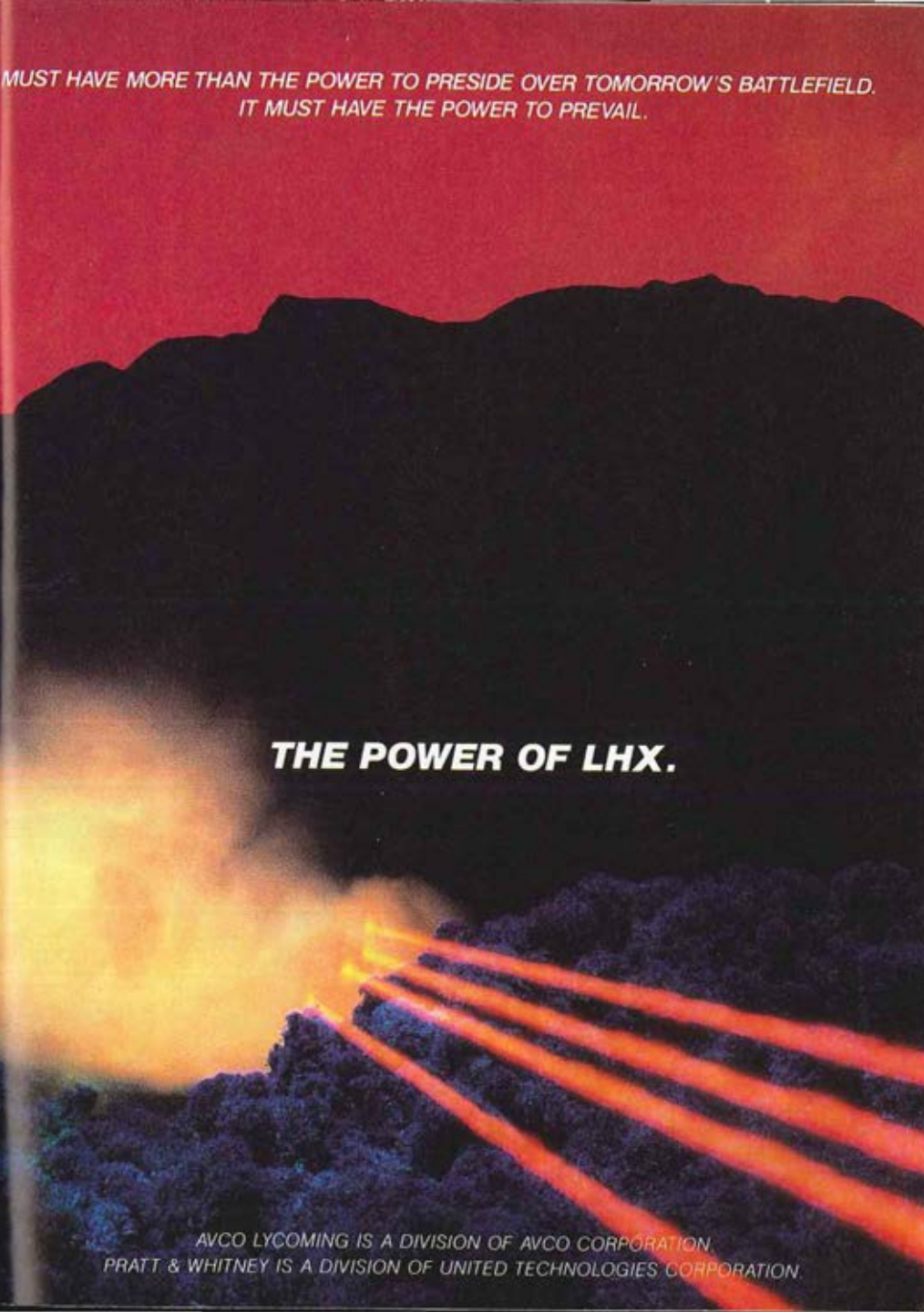
U-21 UTE

BELOW: An RU-21D with SEMA antenna array similar to that on an RU-21E reconnaissance aircraft.

DESCRIPTION: Twelve place unpressurized, high performance, all-weather utility and tactical troop transport with a three-chair, three-litter air ambulance configuration.
MANUFACTURER: Beech Aircraft Corporation, Wichita, Kansas.
POWER PLANT: Two United Aircraft of Canada PT 6A-20 free shaft turbine engines of 520 horsepower each.
PROPELLERS: Beech full-feathering, reversible propellers, 7 ft, 9 in diameter.
SPECIFICATIONS: Span: 50 ft, 3 in. Length: 35 ft, 6 in. Height: 14 ft, 2 in. Empty weight: 6,065 lbs. Gross weight: 7,700 lbs. Retractable tricyle landing gear with single wheels.
PERFORMANCE: Max speed (10,000 ft): 197 knots. Cruising speed (10,000 ft): 184 knots. Service ceiling (at max gross wt): 27,000 ft. Max cruise range: 2,679 n.m. Rate of climb: 1,500 fpm.
REMARKS: A military combination of the Beechcraft corporate turbine-powered King Air 90 and Queen Air, the U-21A is capable of carrying 3,000 lbs. of air cargo and features a spacious cabin with a large cargo door (53.5 in. x 51.5 in.). As a troop transport, the Ute can carry 10 field-equipped men with combat gear stowed under bench-type seats. Initial U-21A acceptance took place in April 1967. Modified version of the Army's NU-8F, which underwent initial user evaluation in March 1964. The RU-21D version was a SEMA configuration.

AVCO LYCOMING AND PRATT & WHITNEY HAVE JOINED FORCES BECAUSE THE ARM

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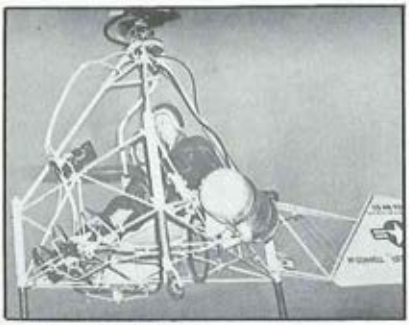
WOTIZZ?

IT'S QUIK QUIZ #1.

Are you sharp in recognizing the not-so-well-known aircraft proposals that have graced our magazine pages over the years? If you can name either the model number or the year in which ten of the 19 models pictured were produced, consider yourself an aviation intellectual. The answers appear on Page 109.

● 4. KAMAN.....

● 8. FAIRC



● 1. McDONNELL.....

● 5. DEL MAR.....

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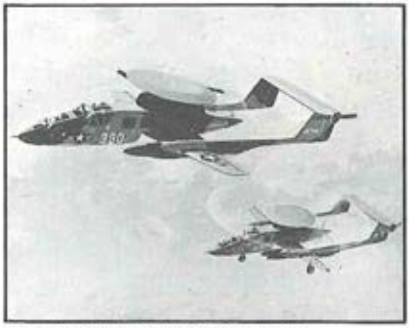
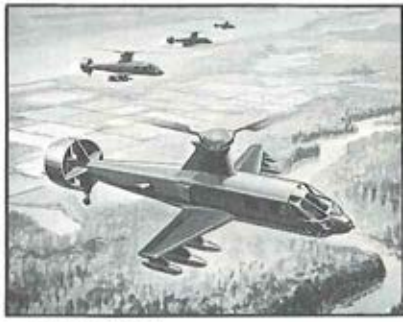


● 13. RYAN AERONAUTICAL.....



● 17. PIASECKI.....

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● 14. CANADAIR.....

● 18. SIKORSKY.....

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● 15. BOEING VERTOL.....

● 19. BEECH.....

SCIENCE/SCOPE

A new battlefield communication system, which provides position and navigation data through a digital network of up to 370 users, is being produced for the U.S. Army and Marine Corps by Hughes Aircraft Company. The Position Location Reporting System (PLRS) supplies position location to troops and their commanders to within 15 meters for ground units and within 25 meters for airborne units through a series of small "smart" radios.

Troops receive position, navigation, and other essential messages by reading a display on a hand-held unit. Commanders viewing large displays know where all PLRS units in the battlefield are located, even those equipped in tanks, helicopters, and airplanes. PLRS uses various encryption techniques to protect data from being intercepted or jammed by the enemy. If a unit falls into enemy hands, it can be eliminated from the system.

An infrared sensor made of standard components turns night into day for tanks, combat vehicles, and helicopters. The compact device, called Hughes Infrared Equipment (HIRE), was designed to be low in cost yet high performing. It can be adapted to periscopes to let gunners see through darkness, haze, or battlefield smoke.

HIRE can be mounted in laser tank fire control systems, light armored vehicles, or used as a target acquisition/fire control sight for antiaircraft, ship, and helicopter applications. The design uses U.S. Army common modules, the standard building blocks for thermal imaging systems.

For more information write to: P.O. Box 11205, Marina del Rey, CA 90295

HUGHES
AIRCRAFT COMPANY

1950'S — OH-13

1960'S — CH-54

1970'S — CH-47D

ROTARY WING AIRCRAFT

1984 EQUIPMENT ISSUE

LEFT: An "S" Cobra NOE below the trees

AH-1 COBRA

LEFT & BELOW: An AH-1S is shown on the deck.

BELOW: AH-1G with stabilized night sight

DESCRIPTION ("S"): Two-place attack helicopter.
MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.
POWER PLANT: Avco Lycoming T53-L-703 turbine engine, 1,800 shaft horsepower.
ROTOR SYSTEM: Single composite two-bladed semi-rigid fiberglass 44 ft. dia. main rotor; flapping hinge, 8 ft. 6 in. dia. tail rotor.
SPECIFICATIONS: Gross wt: 10,000 lbs. Empty wt: 6,598 lbs. Length: 44 ft. 7 in. Height: 12 ft. Fuel: 259 gallons.
PERFORMANCE: Maximum speed (SL): 171 knots, depending on stores. Max range: 362 n.m. Rate of climb: 1,580 fpm.
REMARKS: The AH-1 series, in replacing the UH-1 armed helicopter, started in April 1966 with a development and production contract for 110 AH-1G's. First delivery followed just 13 months later with combat introduction to Vietnam in August 1967. During 1967-1972, 1,126 G's were produced at the rate of 35 per month, logging over one million combat hours. In 1975, 91 G's were equipped with TOW systems as Q's and 198 G's received new a power train becoming the AH-1S (modified). In a three-step program beginning in March 1977, Bell produced 297 new S's by February 1981. In companion steps, the remaining G's were to be remodified in the Modernized "S" configuration and all earlier production "S's" were to receive Modernized Cobra features.

AH-56A CHEYENNE

BELOW: A pusher-prop speeds the AH-56 along

BELOW: Gear up and doing about 380 knots!

DESCRIPTION: Two-place high-speed compound aircraft.
MANUFACTURER: Lockheed-California Company, Burbank, California
POWER PLANT: One General Electric T64-GE-16 turbine of 3,435 shp.
ROTOR SYSTEM: Single rigid rotor, 50.4 ft dia.; tail rotor 10.0 ft dia.; 10 ft dia. pusher propeller for horizontal propulsion.
SPECIFICATIONS: Wing span: 26.7 ft. Gross wt: 16,995 lbs. Empty wt: 11,700 lbs. Length: 55 ft. Height: 13 ft, 7 in. Tandem-seating.
PERFORMANCE: Max speed (SL): 214 kt. Cruise speed (SL): 197 kt. Service ceiling: 26,000 ft. Hover ceiling (OGE): 10,600 feet (std). Maximum range: 547 n.m. Endurance: 5.4 hrs. Rate of climb: 3,420 fpm.
REMARKS: The No. 1 prototype of the Army's AAFSS (Advanced Aerial Fire Support System) was rolled out on May 3, 1967, 13 months after the initial contract was let, with the 10th and final prototype being accepted in August, 1968. FAA certification took place in October '68 with Lockheed and its 813 suppliers to build 375 of the advanced attack helicopters for the U.S. Army. OSA terminated the Cheyenne contract in Aug '72 due to delayed development, rising costs, and the appearance of two competitive company-funded AAH candidates. In a July '72 report, a task force called for a more agile, smaller, and somewhat slower AAH with less sophisticated fire control and navigation equipment.

CH-21 SHAWNEE

BELOW: An H-21 with floats is tested at the Boeing Vertol facility.

LEFT: A hook-up in South Vietnam.

LEFT: An Alaska ski landing.

DESCRIPTION: Twenty-two place single engine, twin rotor personnel and cargo helicopter.
MANUFACTURER: Piasecki Helicopter Corporation (later the Vertol Aircraft Corporation), Morton, Pennsylvania.
POWER PLANT: One Curtiss-Wright supercharged R-1820-103 engine developing 1,425 horsepower,
ROTOR SYSTEM: Tandem fully-articulated three-bladed counter-rotating rotors, each 44 feet in diameter.
SPECIFICATIONS: Gross weight: 15,200 pounds. Empty weight: 8,950 pounds. Length: 52 feet, 6 inches. Height: 15 feet, 9 inches.
PERFORMANCE: Maximum speed (Sea level): 111 knots. Cruise speed (Sea level): 86 knots. Service ceiling: 18,600 feet. Maximum range: 281 nautical miles. Endurance: 2 hours, 41 minutes.
REMARKS: Since the intial date of procurement in June 1950, the Army purchased 334 CH-21s of all models. It also obtained 16 B's from the USAF. In its litter configuration, the CH-21 could carry 12 litters plus seats for two medical attendants. A multi-mission helicopter, the Shawnee utilized wheels, skis, or floats. The Shawnee was, until late 1963, the workhorse of Vietnam, when it was replaced by the UH-1. Widely used by other nations, the French employed the "Flying Banana" in Algeria combat operations.

Largest Membership Gain

(Standings as at 1 January 1985)

Master Chapters — $1,000 Prize

Curr Rk	Chapter Name	Memb Gain
1	Corpus Christi Chapter	+108
2	Army Aviation Center Chapter	+107
3	Air Assault Chapter	+56
4	Fort Hood Chapter	+54
5	Lindbergh Chapter	+46
6	Southern California Chapter	+33
7	Washington, DC Chapter	+18
*8	North Texas Chapter	+12
*8	Mount Rainier Chapter	+12
9	Fort Bragg Chapter	+9
10	Connecticut Chapter	+6
*11	Colonial Virginia Chapter	+5
*11	Wings of the Marne	+5
12	Greater-Atlanta Chapter	+3
13	"Follow Me" Chapter	0
*14	Monmouth Chapter	-8
*14	Rhine Valley Chapter	-8
15	Morning Calm Chapter	-13
16	Indiantown Gap Chapter	-14
17	Monterey Bay Chapter	-17
18	Stuttgart Chapter	-27
19	Aloha Chapter of Hawaii	-35

Senior Chapters — $500 Prize

Curr Rk	Chapter Name	Memb Gain
1	Chesapeake Bay Chapter	+46
2	Fulda Chapter	+32
3	Delaware Valley Chapter	+19
4	Coastal Empire Chapter	+16
5	Hanau Chapter	+10
6	Suncoast Chapter	+9
7	Bonn Area Chapter	+3
8	Chicago Area Chapter	+2
9	Mainz Chapter	0
*10	Jack H Dibrell (Alamo)	-1
*10	Combined Arms Center	-1
11	Taunus Chapter	-7
12	Old Ironside Chapter	-10

AAAA Chapters — $350 Prize

Curr Rk	Chapter Name	Memb Gain
1	The Citadel Chapter	+43
2	Edwin A. Link Memorial	+27
*3	Cedar Rapids Chapter	+16
*3	Valley View Chapter	+16
4	Schwaebisch Hall Chapter	+15
5	Pikes Peak Chapter	+8
6	Tu-Can Chapter	+2
7	Nurnburg Chapter	+1
8	Air Cavalry Chapter	-1
9	Tennessee Valley Chapter	-2
10	Northern Lights Chapter	-3
11	Lone Star Chapter	-5
12	Checkpoint Charlie Chapter	-6
13	Mid-America Chapter	-7
14	Valley Forge MA&JC Chapter	-13

*Tie

Largest Percentage Gain

(Standings as at 1 January 1985)

Master Chapters — $500 Prize

Curr Rk	Chapter Name	% Gain
1	Corpus Christi Chapter	+22%
2	Fort Hood Chapter	+15%
3	Army Aviation Center Chapter	+12%
4	Southern California Chapter	+9%
5	Air Assault Chapter	+8%
*6	Lindbergh Chapter	+6%
*6	North Texas Chapter	+6%
*6	Mount Rainier Chapter	+6%
*7	Connecticut Chapter	+3%
*7	Fort Bragg Chapter	+3%
*7	Washington, DC Chapter	+3%
*7	Wings of the Marne	+3%
*8	Greater-Atlanta Chapter	+2%
*8	Colonial Virginia Chapter	+2%
9	"Follow Me" Chapter	0%
10	Monmouth Chapter	-3%
11	Rhine Valley Chapter	-4%
*12	Monterey Bay Chapter	-5%
*12	Morning Calm Chapter	-5%
13	Indiantown Gap Chapter	-9%
14	Aloha Chapter of Hawaii	-15%
15	Stuttgart Chapter	-16%

Senior Chapters — $250 Prize

Curr Rk	Chapter Name	% Gain
1	Fulda Chapter	+43%
2	Chesapeake Bay Chapter	+35%
*3	Coastal Empire Chapter	+13%
*3	Delaware Valley Chapter	+13%
*4	Hanau Chapter	+8%
*4	Suncoast Chapter	+8%
5	Bonn Area Chapter	+3%
6	Chicago Area Chapter	+2%
7	Mainz Chapter	0%
*8	Jack H. Dibrell (Alamo)	-1%
*8	Combined Arms Center	-1%
9	Taunus Chapter	-7%
10	Old Ironside Chapter	-8%

AAAA Chapters — $175 Prize

Curr Rk	Chapter Name	% Gain
1	The Citadel Chapter	+73%
2	Valley View Chapter	+43%
3	Edwin A. Link Memorial	+40%
4	Cedar Rapids Chapter	+26%
5	Schwaebisch Hall Chapter	+20%
6	Pikes Peak Chapter	+12%
7	Tu-Can Chapter	+4%
8	Nurnburg Chapter	+2%
9	Air Cavalry Chapter	-2%
10	Tennessee Valley Chapter	-3%
11	Lone Star Chapter	-7%
12	Northern Lights Chapter	-8%
13	Mid-America Chapter	-11%
14	Checkpoint Charlie Chapter	-15%
15	Valley Forge MA&JC Chapter	-29%

*Tie

Corpus Christi, Fulda, Chesapeake Bay, and Citadel Chapters take lead after five months

AFTER five months of the six-month Membership Enrollment Competition, the Corpus Christi Chapter of the AAAA leads in **BOTH** categories of the contest — Membership Gain and Percentage Gain — and stands to win $1,500.00 in prize money on March 30. The 1984-1985 contest closes with memberships posted on or before January 31.

The Corpus Christi Chapter — perenially one of the Association's largest membership activities — leads the pack in the **"Master Chapter"** category that embraces the 22 Chapters that had 150 of more members last August 1.

Leading the **"Senior Chapter"** category (75-149 members on August 1) were the Chesapeake Bay and Fulda Chapters who may split or take all of the combined $750.00 in **"Senior Chapter"** prize money pool.

In the **"AAAA Chapter"** category, the Citadel Chapter is out in front of its 14 competitors in both Membership Gain and Percentage Gain and could win $525.00 in prize money with a sweep.

The 1984-1985 winning Chapters will be cited at the Membership Luncheon at the AAAA's 27th National Convention in St. Louis, MO, March 30.

MG Gonzales, BG Parker speak at 2nd Annual ASE Symposium

Some 92 military and industry members participated in a two-day AAAA-sponsored classified symposium at the E-Systems facility in Garland, TX, November 7-8.

The attendees were greeted by **David R. Tacke,** President of E-Systems, and **MG James C. Smith,** AAAA President, who also served as the Symposium M.C.; heard opening remarks by **COL Curtis J. Herrick, Jr.,** PM-ASE; and then listened to the keynote address of **MG Orlando E. Gonzales,** Commanding General of the USA Aviation Systems Command.

11 Technical Papers

Later in the two-day gathering, speakers from AVSCOM, the Naval Air Systems Command, and six aerospace firms presented 11 papers related to Aircraft Survivability Equipment. **BG(P) Ellis D. Parker,** Assistant Commandant,

(Continued on Page 64)

LEFT: COL CURTIS J. HERRICK, JR., PM-ASE, AND RIGHT: MG "JIM" SMITH, AAAA NAT'L PRESIDENT, ADDRESS THE ASE SYMPOSIUM ATTENDEES. CENTER: MG ORLANDO E. GONZALES IS SHOWN CHATTING WITH DAVID R. TACKE, E-SYSTEMS PRESIDENT.

Advance Register for the '85 AAAA Convention and receive a "VERSATOOL" as the 1985 giveaway.

* * *

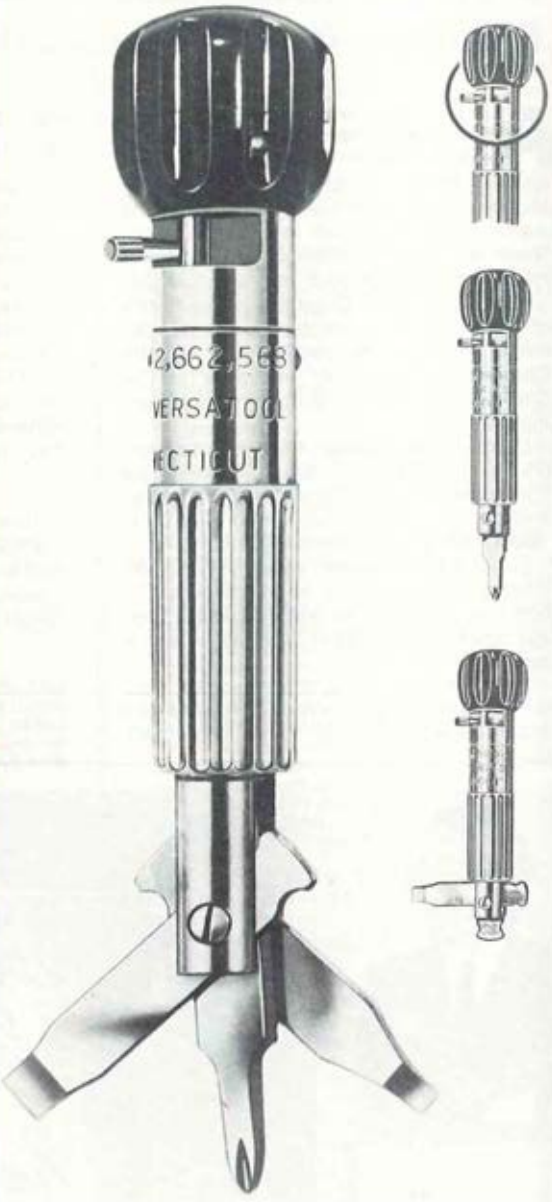
The "Versatool" is an American-made multi-purpose, all-metal screwdriver. It has a reversible ratchet feature and can be used as an offset screwdriver.

* * *

Retail value: $7.95

* * *

Use the pullout Advance Registration Form in the centerfold of this issue on or before February 25.



It's Army Aviation's most coveted award . . the "Outstanding Aviation Unit of the Year Award."

★

It's been presented to aviation companies . . and it has also been won by divisions!

★

Its recipients have spanned the globe! Among its winners have been units from CONUS, Europe, the Caribbean, Alaska, Hawaii, and Viet Nam.

★

The award is normally made by the Army's top soldier, the Chief of Staff, at each year's National Convention of the AAAA.

★

Plan to be present in St. Louis during March 28 — March 31 1985, when the Army, and the AAAA, honor the winner of the "Outstanding Aviation Unit of the Year Award."

Plan to Attend the 1985 AAAA National Convention!

St. Louis Sheraton and Cervantes Convention Center St. Louis, Missouri

THURSDAY, MARCH 28

Membership Meeting
Professional Program:
TEAMWORK:
KEY TO SUCCESS
Early Bird's Reception
Industry Exhibits
Hospitality Suites

FRIDAY, MARCH 29

Professional Program
Industry Exhibits
Membership Luncheon
Cub Club Reunion
President's Reception
Hospitality Suites

SATURDAY, MARCH 30

Professional Program
Industry Exhibits
AAAA Awards Banquet
Hospitality Suites

SUNDAY, MARCH 31

Champagne Brunch

1985 AAAA National Convention
Advance Registration and Hotel Reservation Form

SHERATON ST. LOUIS HOTEL AND CERVANTES CONVENTION CENTER, ST. LOUIS, MO. — MARCH 28-31, 1985

I plan to attend the 1985 AAAA NATIONAL CONVENTION. I understand that I must return this form by **MONDAY, FEBRUARY 25, 1985,** and that I may receive a full refund of my function fees by phone call to AAAA made on or before **WEDNESDAY, MARCH 20, 1985,** or by written notification to AAAA that is received not later than **MARCH 20.** Please **print or type all information NOTE:** Military fees and room rates apply only to Active Army and DAC Personnel, and to those Reserve Component and retired AAAA members who are not in the current employ of defense contractors or suppliers on a full-time, part-time, or consulting basis.

FULL NAME, INCLUDING RANK _____

MAILING ADDRESS _____

CITY _____ STATE _____ ZIP _____

NICKNAME FOR BADGE _____ SPOUSE'S NAME, IF ATTENDING _____

UNIT OR FIRM NAME FOR BADGE _____ OFF. PHONE ( ) _____

ARE YOU A MEMBER OF YOUR FIRM'S EXHIBIT HALL STAFF? ☐ YES; ☐ NO

HAVE YOU BEEN AUTHORIZED BY YOUR CHAPTER TO BE A CHAPTER DELEGATE? ☐ YES; ☐ NO

IF YOU ARE A 1985 CHAPTER DELEGATE, STATE THE NAME OF YOUR CHAPTER _____

1985 AAAA Convention Registration Form

SPECIFIC FUNCTION HELD AT THE 1985 NATIONAL CONVENTION OF AAAA	MIL/DAC MEMB. OR SPOUSE*	CIVILIAN MEMB. OR SPOUSE*	ITEM LINE TOTAL	OFFICE USE
REGISTRATION (Needed to attend Professional Sessions.)	☐ $10	☐ $55	$	
SPOUSE'S BREAKFAST, Sheraton St. Louis, Friday, Mar. 29.	☐ $7	☐ $7	$	4
MEMBERSHIP LUNCHEON, Sheraton St. Louis, Friday, Mar. 29.	☐ $7	☐ $14	$	5
PRESIDENT'S RECEPTION, Sheraton St. Louis, Friday Mar. 29.	☐ $8	☐ $16	$	6
CITY HIGHLIGHTS & GATEWAY ARCH TOUR, Sat. Mar. 30.	☐ $13	☐ $13	$	8
EXHIBIT HALL LUNCHEON, Conv. Center, Saturday, Mar. 30.	☐ $6	☐ $12	$	9
● RECEPTION/AWARDS BANQUET, Conv. Center, Sat., Mar. 30.	☐ $25	☐ $50	$	10
CHAMPAGNE BRUNCH, Sheraton St. Louis, Sunday, Mar. 31.	☐ $6	☐ $12	$	12
★ MEMBERSHIP FEE FOR NON-MEMBERS.	☐ $15	☐ $15	$	
■ TOTAL Check Box: ☐ Mastercard; ☐ Visa; ☐ Personal Check; ☐ Business Check			$	M V P B

CREDIT CARD NUMBER _____ EXPIRATION DATE _____

SIGNATURE _____

★ AAAA membership is required to attend the Convention. ● Formal/Black Tie, Dark Business Suit; Military Blues/Mess Jacket. * Spouses of Members are not required to pay a Registration Fee. ■ Mastercard & Visa credit cards only; no others accepted for function fees.

Please complete and return this form with the appropriate Convention Fee or Fees and your hotel deposit, if applicable, to: AAAA, 1 Crestwood Road, Westport, CT 06880 by Monday, FEBRUARY 25, 1985.

(SEE HOTEL RESERVATION FORM ON THE REVERSE SIDE)

Hotel Reservation Form

1985 AAAA NATIONAL CONVENTION—ST. LOUIS, MO—MARCH 28-31, 1985
RETURN THIS FORM TO: AAAA, 1 CRESTWOOD ROAD, WESTPORT, CONN. 06880

CHECK THE HOTEL YOU PREFER:

( ) SHERATON ST. LOUIS (AAAA HQ HOTEL) ( ) RADISSON ST. LOUIS (½-BLOCK FROM SHERATON)

ARRIVAL DATE _____; ARRIVAL TIME _____; NO. NIGHTS _____; DEPARTURE DATE _____

PLEASE CHECK THE ROOM RATE DESIRED:

( ) MILITARY RATE, SINGLE BEDROOM, $44.00 ( ) CIVILIAN RATE, SINGLE BEDROOM, $67.00

( ) MILITARY RATE, DOUBLE BEDROOM, $50.00 ( ) CIVILIAN RATE, DOUBLE BEDROOM, $77.00

SHARING ROOM WITH _____

GUARANTEED? ☐; CHECK BOX: ☐ Mastercard; ☐ Visa; ☐ American Express; ☐ Personal Check; ☐ Business Check

CREDIT CARD NUMBER _____ EXPIRATION DATE _____

SIGNATURE _____

I understand that to receive a room at AAAA convention rates, I must register or attend at least one of the functions of the 1985 AAAA NATIONAL CONVENTION and that I must return this form to AAAA by **MONDAY, FEBRUARY 25, 1985.** Reservations that are received after **FEBRUARY 25, 1985** will be accepted on a space-available basis. Military identification may be requested by the hotel to receive a room at a military rate.

NOTE: All requests for hotel suites, other than AAAA Chapter Hospitality Suites, must be directed to Lynn Coakley, AAAA National Office, (203) 226-8184.

Reservations will be held until 4:00 p.m. unless guaranteed or covered by deposit equal to one night's stay. Guaranteed hotel reservations must be cancelled before 6 p.m. destination time on the day of arrival. Non-guaranteed reservations will be held until 4 p.m. destination time on the day of arrival, then released for sale to the general public. Cancellation of hotel reservations may be directed to AAAA by phone up to **WEDNESDAY, MARCH 20, 1985.**

Room charges are subject to applicable local and city taxes. Check-in time is 3:00 p.m. Check-out time is 1:00 p.m. If a room at the hotel you prefer is not available, one at the nearest rate will be reserved at a nearby AAAA-designated hotel.

Please complete and return this form with the appropriate Convention Fee or Fees and your hotel deposit, if applicable, to: AAAA, 1 Crestwood Road, Westport, CT 06880 by Monday, FEBRUARY 25, 1985.

ARMY AVIATION ASSOCIATION
1 CRESTWOOD ROAD, WESTPORT, CT 06880
(203) 226-8184

In line with the series of "informational columns" being prepared for the membership by each elected member of your National Executive Board, I'd like you to know that I'm presently serving in the second year of my three year term of office as an AAAA National Vice President. However, my service on the Board actually began in April, 1976, when I was appointed as a National Member-at-Large.

I think it's important to mention this nine-year appointive and elective stint because it lends credence to the following:

You should know — and be pleased with the fact — that your Board is made up of many highly qualified individuals who truly are in a position to serve your interests . . and they've done so. I say this because — collectively — the Board represents every major segment of today's Army Aviation . . the Active Army, Reserve Components, industry, and the commissioned officer corps, Aviation Warrant Officers, DACs, crewmembers, and, lastly, retired members in all ranks and grades.

In being a part of this Board for almost a decade, I've been most impressed by the dedication with which each of my fellow Board members has approached his or her term of voluntary service. There's a genuine interest on the part of each Board member to contribute personally to the overall Board effort — to play an active role in existing membership programs or to participate in the development of new programs.

Like my contemporaries I've served on many voluntary boards and councils, and belong to many organizations that provide a wide range of benefits and services. I find that service on the AAAA National Board, in particular, is unique and highly productive, and it is a pleasure to serve the Army Aviation community in this manner.

John J. Stanko, Jr.
Vice President, AAAA

SHOWN L-R AT A RECENT CHICAGO CHAPTER-AAAA DINNER MEETING ARE LTC "PETE" PEDUZZI, OCAR AO; MRS. CAROLINE NICHOLS; COL DAVID E. BAEB, FOURTH ARMY AO/CHICAGO CHAPTER PRES; MG STEPHEN NICHOLS, DEP CDR, FOURTH US ARMY/GUEST SPEAKER; MRS. PAT BAEB; COL ENGLE SCOTT, FIFTH ARMY AO; AND LTC RON TAMACCIO, USAR AVN ADVISOR, FORSCOM.

ASE SYMPOSIUM

(Continued from Page 57)

USAAVNC, was the guest speaker at the mid-point dinner meeting, briefing the attendees on the Branch implementation now underway and current activities at the Aviation Center.

LTC Eddie E. Moore, Ret., of the Garland Division; **CPT Michael E. Root,** ASE-PMO; and **Ms. Lynn Coakley,** of the AAAA Nat'l Office, provided administrative support to **COL Herrick.** A Third ASE Symposium is scheduled to be held at the Sanders Associates' facility in Nashua, NH, in November.

Chicago Chapter—AAAA hears MG Nichols of Fourth US Army

With the growth of the Fourth Army Headquarters at Ft. Sheridan, "a signifiant increase in the active Army Aviator population has been experienced," according to **COL David E. Baeb,** the Chicago Area-AAAA Chapter President.

"The Chicago Area Chapter is really starting to come to life," **Baeb** continued. "At the last minute, our scheduled guest speaker, **BG Wayne Knudson,** of DA, was unable to make it and **MG Stephen Nichols,** the Deputy Commander of Fourth U.S. Army, was gracious enough to fill in. As usual, **MG Nichols'** presentation was both enlightening and enjoyable and a good time was had by all."

We're 100% AAAA!

CW3 Gary A. Merrill writes from APO NY 09145: "These final four applications bring us to 100% membership of those individuals assigned or attached to the 5th Aviation Detachment who currently possess an aviation related MOS.

"We here in the 5th are very proud of this accomplishment, that of belonging to such a professional organization as AAAA.

"Having newly formed the 5th (16 Feb 84), we're looking forward to many good years ahead in being a part of Army Aviation in the **Netherlands** and being a part of AAAA."

Aviation Center Chapter cites its "Trainers of the Year"

Three outstanding performers were honored by the AAAA' Army Aviation Center Chapter at its November 4 dinner meeting when each was cited for his individual accomplishments in the training area in CY84.

Receiving AAAA "Certificates of Appreciation" from **MG Bobby J. Maddox,** USAAVNC CG, were:

Sergeant Roger D. Hutchinson, Army Aviation Systems Command, the "NCO Trainer of the Year." (See photo).

Major Phillip L. Curtis, Dept. of Combined Arms Tactics, the "Officer/WO Trainer of the Year."

William Jackson, Directorate of Training and Doctrine, the "Civilian Trainer of the Year."

Fort Eustis NCO selected as AAAA's "Trainer of Year"

AN instructor at the U.S. Army Aviation Logistics School, Fort Eustis, VA, has been named as the first recipient of the Army Aviation Association of America's "**Aviation Trainer of the Year**" award.

Sergeant First Class Walter D. Smith, Chief of the Basic Technical Division, Department of Noncommissioned Officer Training, USAALS, received the newly created award during the AAAA's Aviation Center Chapter awards dinner meeting, December 4, at the U.S. Army Aviation Center. The dinner was held in conjunction with an Army Aviation Policy Committee meeting held at the same time on the post.

The 36-year-old soldier from Las Vegas, NV, is assigned to the 1st Staff and Faculty Company, School Brigade, and has been an instructor with the school's Basic Technical Course for a year. Before that, he was an instructor at the USAAVNS.

The award is presented annually by the AAAA and sponsored by the Singer Link Flight Simulation Division. It is given to the trainer "who has made an outstanding contribution to Army Aviation during the awards period, in this instance, the calendar year beginning January 1, 1984.

Smith was selected for his "innovations and leadership which significantly increased the effectiveness of noncommissioned officer training throughout the aviation career management field," according to the citation which accompanied the nomination.

The citation continues, "His personal efforts, tireless devotion to duty, and organizational abilities have been instrumental in solidifying the Aviation NCO Training Program for the USAALS and developing his instructors into the totally professional, highly motivated team they are today."

SFC(P) WALTER D. SMITH, THE AAAA'S 1984 "TRAINER OF THE YEAR", ACCEPTS A PORTRAIT OF THE AWARD TROPHY FROM MG BOBBY J. MADDOX, USAVVNC CG. THE ACTUAL TROPHY WAS STILL BEING BRONZED AND THE PORTRAIT WAS PRESENTED SO THAT THE AWARD COULD BE MADE IN CONNECTION WITH THE ANNUAL ARMY AVIATION TRAINING SYMPOSIUM. THE TROPHY SPONSORED BY SINGER LINK FSD WILL BE ON DISPLAY IN THE ARMY AVIATION MUSEUM.

The Prime Mover

A veteran of 15 years' service, all of it in Army Aviation, **Smith** was cited as "the prime mover and innovator in improving and redesigning the basic technical courses," including the aviation maintenance supervisor course, aircraft weapons systems repairer supervisor course, and aviation technical inspector courses.

Among his accomplishments were the complete rewrite of all basic technical course programs of instruction, deleting all common core military type subjects. He also rewrote the programs of instruction for the aviation series technical inspector course and aircraft weapons system supervisor/technical inspector courses. The revised programs of instruction were implemented for FY 1985 which began October 1.

In addition to his teaching in the basic technical courses, the sergeant trained an aviation unit in the Army Maintenance Management System to bring the unit's maintenance supervisors and technical inspectors to a higher level of proficiency. He was lauded by soldiers in the unit for his knowledge and help in the TAMMS area. He then applied the same technique to a unit which uses the Army's air cushion vehicle watercraft instead of aircraft. IIIII

CH-34 CHOCTAW

DESCRIPTION: 12- to 16-place cargo and light tactical transport helicopter.
MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.
POWER PLANT: One Curtiss-Wright R-1820-84 piston engine of 1,425 horsepower.
ROTOR SYSTEM: Single four-bladed main rotor, 56 foot diameter. Four-bladed metal anti-torque rotor, 9 feet, 4 inch diameter.
SPECIFICATIONS: Gross Weight: 13,000 pounds. Empty Weight: 7,675 pounds. Length: 65 ft. 8 inches. Height: 15 feet, 10 inches.
PERFORMANCE: Maximum speed (Sea level): 107 knots. Cruise speed (SL): 95 knots. Service ceiling: 9,500 feet. Hover ceiling (OGE): 2,400 feet. Maximum range: 318 nautical miles. Rate of climb: 1,100 feet per minute.
REMARKS: Beginning in FY 1955, the Army procured a total of 437 Choctaws of A and C models through FY 65. The VH-34 was used for VIP transport, notably as the first helicopters used by the Presidential Flight Detachment. It had an eight-litter med evac capability.

CH-37 MOJAVE

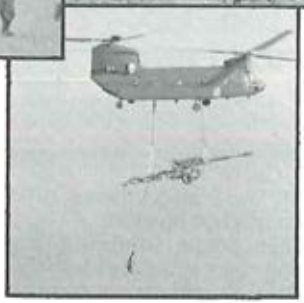
DESCRIPTION: 26-place medium cargo helicopter.
MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.
POWER PLANT: Two R-2800-54 Pratt & Whitney piston engines of 2,100 hp each.
ROTOR SYSTEM: Single five-bladed main rotor, 72 ft. diameter. Four-bladed metal anti-torque tail rotor, 15 ft. diameter.
SPECIFICATIONS: Gross weight of the CH-37 is 31,000 pounds. Empty weight is 20,690 pounds. Length: 88 ft. Height: 22 feet. Rotor Diameter: 72 feet. Tail Rotor Dia.: 15 feet.
PERFORMANCE: Maximum speed (Sea level): 114 knots. Cruise speed (SL): 101 knots. Service ceiling: 8,700 feet. Hover ceiling (OGE): 1,100 feet. Maximum range 167 nautical miles. Rate of climb: 910 feet per minute.
REMARKS: Since initial procurement in 1956, the Army purchased 91 similarly powered CH-37 "A" and "B" models through FY 65. The Mojave is loaded through clamshell doors in the nose portion of the aircraft. It also had a 24-litter med evac capability, or could carry three tons of cargo.

ABOVE: A CH-47
lifts a CV-2 Caribo

ABOVE: The fly-by-wire, triple hook CH-47 with the craft operated from the retractable load controller crewmember's (LCC) station. CIRCLE ABOVE: The Boeing Model 347 — the world's largest tandem rotor 'copter with a controllable tilt-wing.

CH-47 CHINOOK

RIGHT: The CH-47 demonstrates its flotation ability.



DESCRIPTION ("D"): 47-place twin-turbine, deployable tandem-rotor medium lift transport helicopter.
MANUFACTURER: Boeing Vertol Division, Philadelphia, Pennsylvania.
POWER PLANT: Two Lycoming T55-L-712 turboshaft engines, 3,750 shaft horsepower each.
ROTOR SYSTEM: Tandem three-bladed, counter-rotating fiberglass rotors, 60 ft. dia.
SPECIFICATIONS: Max gross wt: 50,000 lbs. Empty wt: 23,149 lbs. Length: 51 ft. Height: 18 ft. 7.8 in. Fuel: 1,030 U.S. gallons.
PERFORMANCE (at gross wt.): : Max speed (SL): 142 knots. Service ceiling: 8,500 ft. Hover ceiling (OGE): 6,000 ft. Max range: 229 n.m. Rate of climb: 1,100 fpm.
REMARKS: Selected to produce a new medium transport lift helicopter in September 1958, the Vertol Division delivered its first Chinook to the Army four years later. Some 699 were delivered, the Chinook being a combat-tested performer through Vietnam. The B and C models utilize the same airframe as the A, the B using T55-L-7C turbines and the C using the T55-L-11 engine. The rollout of the D prototype took place in March 1979 with the first flight occuring two months later. Army plans call for 436 earlier Chinooks to be remodified over a 10-12 year timespan with additional new production CH-47D's being ordered to meet the Army's continuing MLH needs.

CH-54 TARHE

DESCRIPTION: 48-place twin-turbine heavy lift helicopter.
MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.
POWER PLANT: Two Pratt & Whitney JFTD-12A-5A turbines of 4,800 hp each.
ROTOR SYSTEM: Single six-bladed main rotor; four-bladed metal anti-torque tail rotor.
SPECIFICATIONS: Gross wt: 42,000 lbs. Useful load: 19,031 lbs. Length: 88 ft, 6 in. (Blades extended). Height: 25 ft, 4 in. Rotor Dia: 72 ft. Tail Rotor Dia: 15 ft, 4 in. Pod (28' 1" × 9', 6"): 24 litters + 15 seats; 45 troops.
PERFORMANCE: Max speed (SL/GW): 111 kts. Cruise (SL/GW): 96 kts. Service ceiling: 13,000 feet. Hover ceiling (OGE): 4,000 feet. Best rate of climb: 1,700 fpm. Endurance: 2 hrs. 15 minutes.
REMARKS: Since first flight (1962) and initial procurement of six Sikorsky S-64 Skycranes (1964), the Army had purchased 28 CH-54's through FY 68. Designed to carry loads externally, it has a rear-facing pilot's seat to provide a clear view of the cargo during pickups and deliveries. By means of a hoist it can pick up or deposit loads without landing. A lightweight van (universal pod) can be attached to the fuselage and used as a CP, MASH, or repair shop. Particularly suited for recovering downed aircraft and offloading in ship-to-shore missions, the CH-54 did yeoman service in Vietnam.

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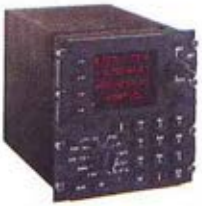

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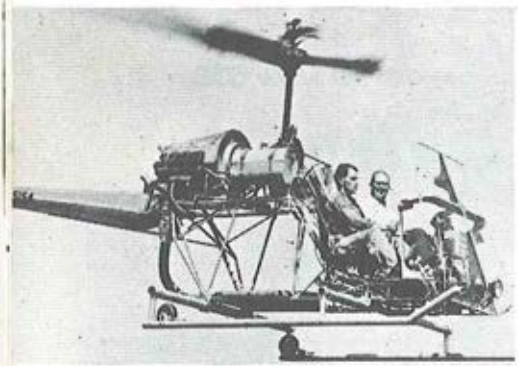
H-24



DESCRIPTION: Two-place (pilot and passenger) observation and medical evacuation helicopter.
MANUFACTURER: Seibel Helicopter.
POWER PLANT: One Avco Lycoming 4-cylinder, horizontally opposed, aircooled 0-290-D1 piston engine of 130 horsepower.
ROTOR SYSTEM: One wooden main rotor blade of 29 foot diameter; a two-bladed 74 inch tail rotor.
SPECIFICATIONS: Gross weight: 1,540 pounds. Places: Two, or pilot and one litter.
PERFORMANCE: Cruising speed (Sea level): 51 knots. Service ceiling: 4,300 feet. Maximimum range: 113 statute miles.
REMARKS: Two H-24 Seibel helicopters were procured in Fiscal Year 1951 for test and evaluation.

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More than 200 Army fixed and rotary wing aircraft are pictured on the 120 editorial and advertising pages of this December 1982 "Equipment Issue." **Do you pride yourself on your aircraft recognition capability?** If so, turn to page 114 and take the **QUICK QUIZ** that appears on that page.

H-25 ARMY MULE

DESCRIPTION: Eight-place tandem rotor cargo and utility helicopter.
MANUFACTURER: Piasecki Aircraft Corporation, Philadelphia, Pennsylvania.
POWER PLANT: One Continental Motors 9-cylinder radial R-975-46 engine of 475 horsepower.

ROTOR SYSTEM: Two three-bladed counter-rotating rotors. 35 foot diameter.
SPECIFICATIONS: Gross Weight: 5,500 pounds. Rotor Diameter: 35 feet. Fixed landing gear. The H-25 crew numbered two persons, with an optional load of three to six passengers.
PERFORMANCE: Cruising speed (Sea level): 80 knots. Service ceiling: 11,500 feet. Maximum range: 411 nautical miles.
REMARKS: The Piasecki H-25 was developed for the U.S. Navy for rescue operations, but with minor modification, it met Army operational needs in cargo and utility missions. The first H-25A Army Mules were purchased in FY 1953 with the highest full-year inventory count reaching 63 in FY 1955. All inventory aircraft were later turned over to the Navy for use.

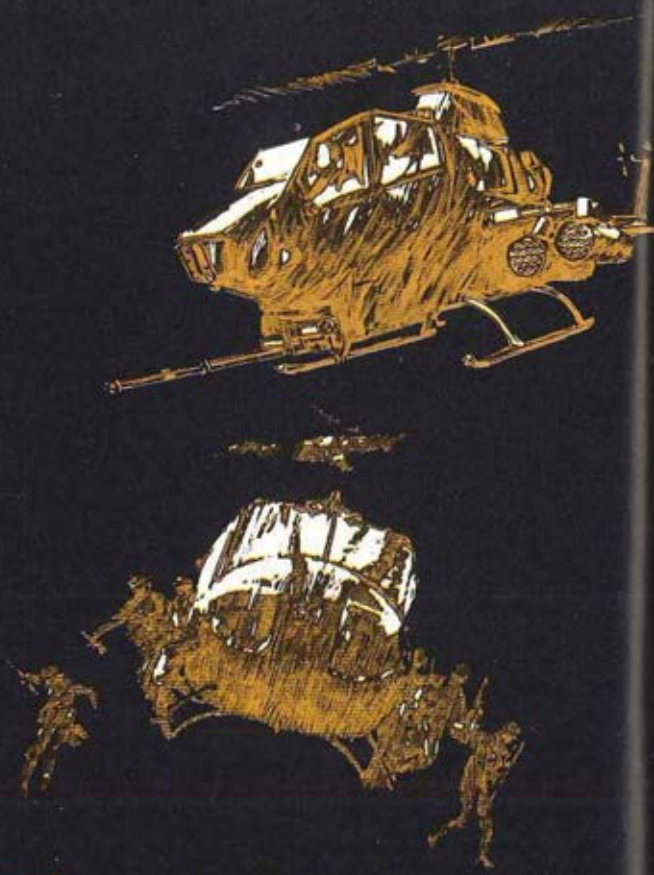
H-26

DESCRIPTION: One-place observation and reconnaissance research helicopter.
MANUFACTURER: American Helicopter Company.
POWER PLANT: Two American Helicopter 48 horsepower XPJ49-AH-3 tip-mounted pulse jet engines of 36 pounds thrust each.
ROTOR SYSTEM: Single two-bladed teetering rotor system, with rotor blades by Prewitt.
SPECIFICATIONS: Gross Weight: 810 pounds.
PERFORMANCE: Cruising speed (Sea level): 65 knots. Service ceiling: 7,000 feet. Maximum range: 115 nautical mailes.
REMARKS: The Army procured five American Helicopter XH-26's during the period 1952-1954 for engineering and operational evaluation. The aircraft shown in the photograph is on permanent display at the U.S. Army Aviation Museum at Fort Rucker, Alabama.

H-30

DESCRIPTION: Two-place (pilot and passenger) observation, medical evacuation, and utility helicopter.
MANUFACTURER: McCulloch Motors Corporation.

POWER PLANT: One Franklin Motors 6A4-200-C6 6-cylinder, horizontally opposed, aircooled engine of 200 horsepower.
ROTOR SYSTEM: Tandem three-bladed rotor system with each blade being 22 feet in diameter.
SPECIFICATIONS: Gross Weight: 2,000 pounds. Rotor Diameter: 22 feet.
PERFORMANCE: Cruising speed (Sea level): 79 knots. Service ceiling: 12,000 feet. Maximum range: 228 nautical miles. Side-by-side crew seating.
REMARKS: Two McCulloch Motors H-30 helicopters were procured by the Army in 1952 for operational and engineering evaluation. The rotor hub of the H-30 was later used on the Hughes YHO-2 which eventually became the Army's TH-55. The H-30 had tricyle landing gear and a full "greenhouse" that afforded the pilot and passenger maximum all-around visibility.



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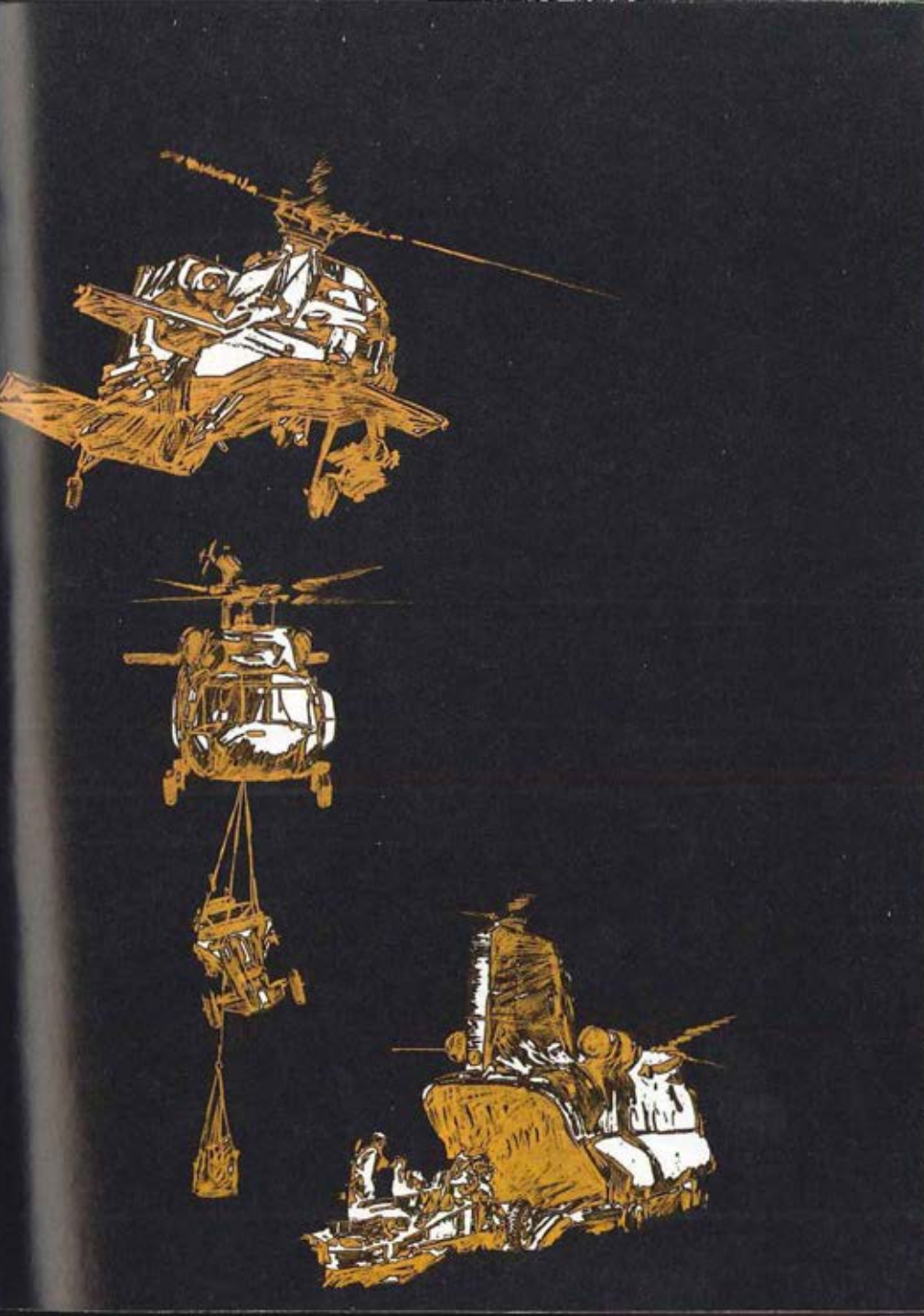

H-31

DESCRIPTION: Eight-place (pilot and three to seven passengers) medical evacuation and utility helicopter.
MANUFACTURER: Doman Helicopters Inc, Danbury, Connecticut.
POWER PLANT: One Avco Lycoming SO-580-D 8-cylinder piston engine of 400 horsepower.
ROTOR SYSTEM: Single four-bladed main rotor system utilizing wooden blades. Three-bladed tail rotor (wooden blades).
SPECIFICATIONS: Gross Weight: 5,200 pounds (with eight persons aboard).
PERFORMANCE: Cruising speed (SL): 68 knots. Service ceiling: 5,700 feet. Maximum range: 394 nautical miles.
REMARKS: The Army procured two Doman Helicopters H-31's in 1952 for test and evaluation by the US Army Aviation Test Board at Fort Rucker, Alabama. The aircraft had a completely sealed, non-articulated rotor system (the first "rigid rotor" system in use), and featured four-wheel fixed landing gear and an oversize cargo door. The Doman commercial designation for the H-31 was LZ-5.

H-32 HORNET

DESCRIPTION: Two-place (pilot and passenger) observation helicopter.
MANUFACTURER: Hiller Aircraft Company, Palo Alto, California.
POWER PLANT: Two Hiller HR J2B Ram Jet tip-mounted engines of 30 pounds thrust each.

ROTOR SYSTEM: Single two-bladed metal-main rotor and single two-bladed wooden tail rotor.
SPECIFICATIONS: Gross Weight: 1,080 pounds. Main Rotor Diameter: 23 feet. Tail Rotor Diameter: 32 inches.
PERFORMANCE: Cruising speed (Sea level): 61 knots. Service ceiling: 11,500 feet. Maximum range: 32 nautical miles.
REMARKS: The ram jet Hiller Hornet first flew in 1950, although the Army did not take delivery of this type of aircraft until 1956. at which time it purchased six. The H-32 featured extremely high maneuverability and agility, an exceptional rate of climb, side-by-side seating for the pilot and the observer-passenger, and a sturdy landing skid in lieu of wheels. The Hornet was the first practical micro-copter in an era of large machines.

H-33 (XV-3)

DESCRIPTION: Two-place tilt-rotor research aircraft.
MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.
POWER PLANT: One Pratt & Whitney R-985-AN-3 engine of 450 horsepower.
ROTOR SYSTEM: Two two-bladed semi-rigid tilting prop-rotors of 23 feet diameter.
SPECIFICATIONS: Gross Weight: 4,850 pounds. Empty Weight: 4,200 pounds. Length: 30 feet, 4 inches. Height: 13 feet, 7 inches.
PERFORMANCE: Max speed (SL) : 131 knots. Cruising speed (SL): 114 knots. Service ceiling: 12,000 ft. Max range: 161 nautical miles.
REMARKS: Two aircraft were procured in '51 under a joint Army-USAF contract, No. 4147 being first flown in Aug '55. The prop-rotor H-33 was then destroyed in an accident, two-bladed semi-rigid rotors being added to the

No. 4148. The latter achieved full in-flight conversion of its tilting rotors in Dec '58, a 10-second operation, the world's first such performance by this type of aircraft. The convertiplane was also designated as the XV-3.

H-39

DESCRIPTION: Four-place (pilot and three passengers) utilty helicopter.
MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.
POWER PLANT: One Turbomeca Artouse II-XT-51-T3 turbine engine of 400 horsepower.
ROTOR SYSTEM: Single four-bladed articulated main rotor of 35 foot diameter and metal three-bladed anti-torque tail rotor of 6 foot, 4 inch diameter.
SPECIFICATIONS: Gross Weight: 3,361 pounds. Empty Weight: 2,105 pounds. Length: 41 ft, 9 in. Height: 9 ft, 7 in.
PERFORMANCE: Maximum speed (Sea level): 132 knots.Cruise speed (SL): 121 knots. Service ceiling: 17,900 feet. Hover ceiling (OGE): 15,100 feet. Maximum range: 305 nautical miles. Endurance: 2 hours. Rate of climb: 1,680 feet per minute.
REMARKS: The H-39 was basically a modified H-18 with an Artouse II gas turbine engine installed. In 1954 the Army obtained one Sikorsky YH-18A to be used for operational and engineering evaluation. The H-39 set World Records in 1954 for its class for speed (132 knots) and altitude (24,220 feet.)

HO-1 DJINN

DESCRIPTION: Two-place (pilot and passenger) obsevation and reconnaissance helicopter.
MANUFACTURER: Sud Aviation of Paris, France.

POWER PLANT: Single Turbomeca compressed air Palouste 4 turbo-generator of 240 horsepower.
ROTOR SYSTEM: Single two-bladed main rotor, 35 feet, 5 inches in diameter. Air bled from the compressor was fed to the Djinn's blade-tip ejectors providing thrust for their rotational power.
SPECIFICATIONS: Gross Weight: 1,676 pounds. Empty Weight: 794 pounds. Length: 17 ft. 5 inches. Height: 8 feet, 7 inches.
PERFORMANCE: Max speed (SL): 68 knots. Cruise speed (SL): 54 knots. Hover ceiling (OGE): 4,000 ft. Hover ceiling (IGE): 2,500 ft. Max range: 144 nm Endurance: 2 hrs, 15 min.
REMARKS: The Sud Djinn was the first aircraft to receive the Army's new "Helicopter Observation — HO" designation. Three YHO-1's were purchased by the Army for engineering and operational evaluation at its U.S. Army Aviation Test Board.

HO-3

DESCRIPTION: Two-place (pilot and passenger) observation and reconnaissance helicopter
MANUFACTURER: Brantley Helicopter Corporation, Frederick, Oklahoma.

POWER PLANT: One Lycoming VO-360 engine of 180 horsepower.
ROTOR SYSTEM: Single three-bladed main rotor of 28 feet, 3 inches diameter; Brantley-designed two-section blades.
SPECIFICATIONS: Gross Weight: 1,670 pounds. Empty Weight: 1,020 pounds. Length: 21 feet, 9 inches. Height: 6 feet, 9 inches.
PERFORMANCE: Maximum speed (Sea level): 87 knots. Cruising speed (Sea level): 79 knots. Service ceiling: 9,000 feet. Hover ceiling (OGE): 4,000 feet. Normal range: 288 nautical miles. Rate of climb: 1,400 fpm.
REMARKS: The Army purchased five YHO-3's (Commercial off-the-shelf Brantley B-2's) for engineering and operational evaluation. The Army test aircraft had skid gear instead of wheels as shown. The YHO-3 was referred to affectionately as an "ice cream cone" by all flight test personnel.

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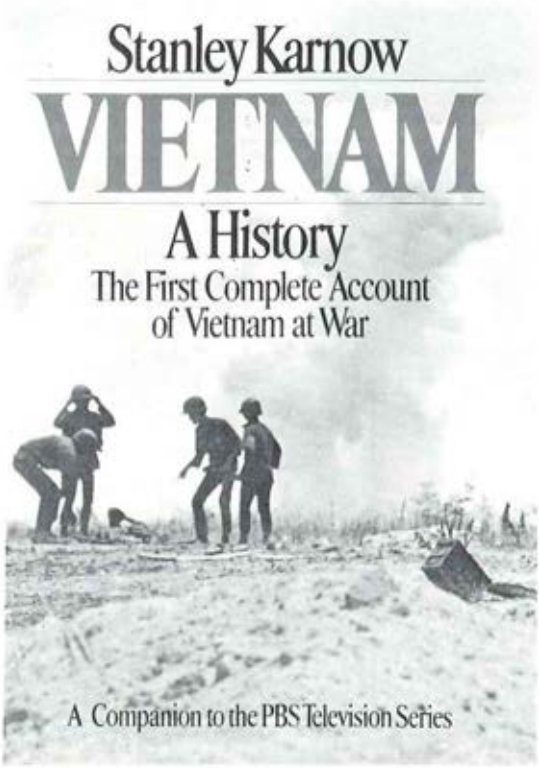
OH-4A

DESCRIPTION: Four-place light observation helicopter.
MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.
POWER PLANT: One Allison T63 turbine engine of 250 horsepower.
ROTOR SYSTEM: Single two-bladed main rotor system, 33.3 foot diameter; metal two-bladed tail rotor, 5 feet, 2 inch diamater.
SPECIFICATIONS: Gross Weight: 2,573 pounds. Empty Weight: 1,536 pounds. Length: 38 feet, 8 inches. Height: 8 feet, 10 inches.
PERFORMANCE: Maximum speed (Sea level): 118 knots.Cruising speed (SL): 97 knots. Service ceiling: 20,000 feet. Hover ceiling (OGE): 8,000 feet. Maximum range: 326 n.m. Endurance: 2 hours, 35 minutes Rate of climb: 1,100 feet per minute.
REMARKS: Designated as the Bell D-250, the OH-4A (HO-4) was the first of the three competing Light Observation Helicopters (LOH) to fly, taking to the air in December 1962. Five OH-4's were delivered to the U.S. Army Aviation Test Board for test and evaluation in January 1964.

OH-5A

DESCRIPTION: Four-place light observation helicopter (LOH).
MANUFACTURER: Hiller Aircraft Company, Palo Alto, California.
POWER PLANT: One Allison Division T63-A-5 turbine engine of 250 shaft horsepower.
ROTOR SYSTEM: Single two-bladed Hiller "L" rotor by Parsons, 35 ft. 5 in. diameter. Two-bladed metal tail rotor, 6 ft. diameter.
SPECIFICATIONS: Length: 41 ft. 4 in. Height: 9 ft. 2 in. Gross Weight: 2,530 pounds. Empty Weight: 1,395 pounds.
PERFORMANCE: Max speed (SL): 112 knots. Cruise speed: 110 knots. Service ceiling: 16,400 feet. Hover ceiling (OGE): 12,000 feet. (IGE):15,950 feet. Endurance: 8.1 hours. Rate of climb: 1,830 feet per minute.
REMARKS: Five OH-5As were built for the Army to test and compare with two other versions of the proposed LOH. The first flying model was turned over to the Army in December 1963. The Hiller OH-5A was the first of the three LOH's to be eliminated fom the LOH competition. A modified version of the Hiller LOH is marketed as the FH-1100.



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OH-6A CAYUSE

LEFT: A Cayus
pilot checks hi
gun mountings

DESCRIPTION: Four-place light observation helicopter (LOH).
MANUFACTURER: Hughes Helicopters Inc.
POWER PLANT: One Allison T63-A-5A turbine of 252 horsepower (derated).
ROTOR SYSTEM: Single four-bladed main rotor, 26 ft. 4 in. Two-bladed metal tail rotor, 4 ft. 3 in.
SPECIFICATIONS: Mission gross weight: 2,163 lbs. Overload gross wt: 2,700 lbs. Empty weight: 1,030 lbs. Overall length: 30 ft. 4 in. Fuselage length: 23 ft. Height: 8 ft., 6in.
PERFORMANCE (at 2,400 lbs.): Cruising speed (SL): 125 knots. Service ceiling: 15,800 ft. Hover ceiling (OGE): 7,200 ft. (IGE): 12,100 ft. Normal range: 475 n.m. at 5,000 feet. Rate of climb: 1,550 fpm. Fuel: 400 lb.
REMARKS: Commercially marketed as the Hughes 500, the OH-6A was the winning LOH design tested and evaluated by the USA Aviation Test Board. The initial date of procurement for the Hughes OH-6A Cayuse was May 26, 1965 with first deliveries to U.S. Army, Vietnam commencing in early 1968. Organic to division, brigade, and battalion or equivalent units, the OH-6A was employed in performing command and control, visual observation, target acquisition, and reconnaissance missions. Highly popular with aviators in USARV, the "Loach" proved to be virtually indestructible, taking major hits from ground fire and still coming home. The OH-6A is currently active in ARNG units and is being updated and maintained through AVSCOM.

OH-13 SIOUX

RIGHT: An OH-13B in flight at the Bell plant. BELOW: A turbo-supercharged OH-13S helicopter on the ramp.

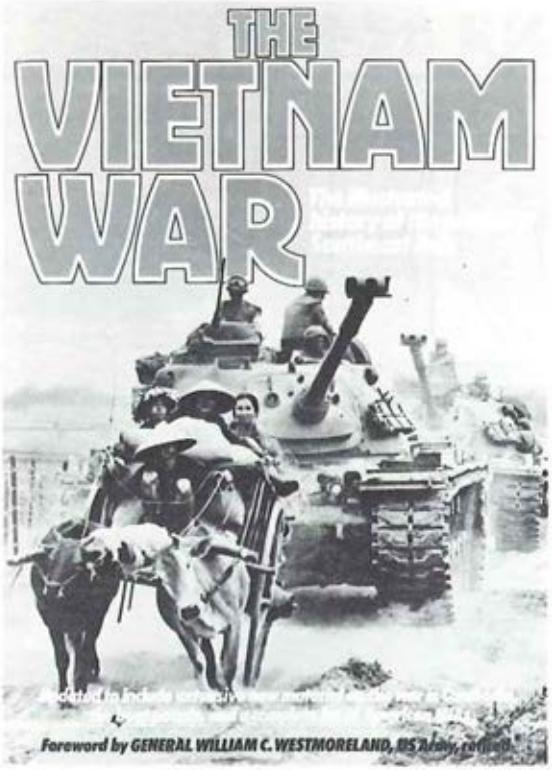
BELOW: Sioux Scout, a 2-place experimental armed helicopter that led to the HueyCobra.

DESCRIPTION: Three-place observation, recon, and medical evacuation helicopter.
MANUFACTURER: Bell Helicopter Company, Fort Worth, Texas.
POWER PLANT: One Lycoming VO-435-25 6-cylinder, horizontally opposed, aircooled, turbo-supercharged engine of 260 hp.
ROTOR SYSTEM: Single two-bladed metal main rotor, 37 ft. diamater; two-bladed metal tail rotor, 5 ft, 10 in. diameter.
SPECIFICATIONS: Gross Weight: 2,950 pounds. Empty Weight: 1,936 pounds. Length: 43 ft., 4 in. Height: 9 ft., 3 in.
PERFORMANCE: Max speed (Sea level): 92 knots. Cruise speed (SL): 82 knots. Service ceiling: 20,000 feet. Hover ceiling (OGE): 18,600 feet. Maximum range: 373 nautical miles. Endurance: 2 hours. Rate of climb: 880 feet per minute.
REMARKS: The Army procured its first YR-13 in Dec 1946. Since that date, it has purchased 2,197 OH-13's of all models ranging from A's through T's. An E model drone demonstrated a remote control capability more than six miles away from its ground control unit. Many OH-13's performed admirably in the Korean War as scouts and med evac aircraft. The T served as a basic instrument trainer. Very agile, OH-13's were crowd pleasers for many years as Bozo, the clown, or in their numerous Square Dance demonstrations or lifting a 70 lb. Yo-Yo.

OH-23 RAVEN

BELOW: A familiar sight in Korea: the two-litter OH-23 descending to the pad

DESCRIPTION ("G"): Four-place observation, utility, and med evac helicopter.
MANUFACTURER: Hiller Aircraft Company, Palo Alto, California.
POWER PLANT ("G"): One Lycoming VO-540 6 cylinder, horizontally opposed, aircooled engine of 305 hp.
ROTOR SYSTEM: Single two-bladed metal main rotor, 35 ft, 5 in. dia.; two-bladed tail rotor, 5 ft., 6 in. dia.
SPECIFICATIONS: Gross wt: 2,800 lbs. Empty wt: 1,759 lbs. Length: 40 ft., 8 in. Height: 10 ft., 2 in.
PERFORMANCE: Max speed (SL): 84 knots. Cruise speed (SL): 79 knots. Service ceiling: 15,200 ft. Hover ceiling (OGE): 5,800 ft. Max-range: 259 n.m. Endurance: 3 hrs, 12 min. Rate of climb: 1,290 fpm.
REMARKS: With procurement starting in FY 1950, the Army ordered A through G models, excluding E. Used in the Korean War with two external litters, the A's and B's had 178-200 hp Aircooled Motors. The "D" model Raven was used mainly as the primary helicopter trainer until late 1965 when it was replaced by the TH-55A. The four-place F was used throughout Latin America for Coast & Geodetic Survey missions. The F and G models were very similar in capabilities, the F being slightly larger and heavier and being sold commercially as the E4. By January 1962 the Army had 656 OH-13 Ravens in its inventory.



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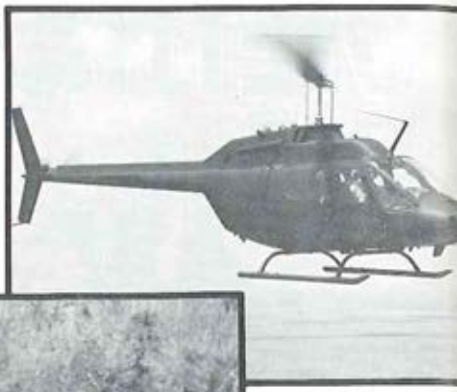
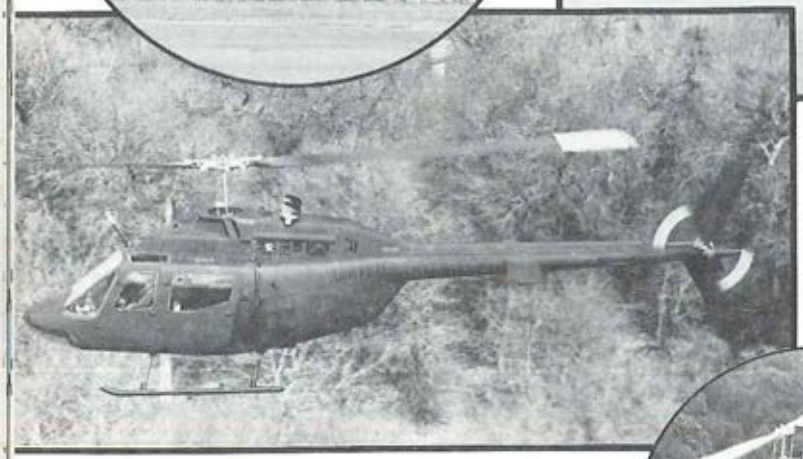




OH-58 KIOWA

LEFT: An OH-58D (AHIP) utilizing a mast mounted sight.

BELOW: Kiowa with inflatable floats.

BELOW: The OH-58A.

LEFT: The OH-58C, note differences between the C and the A versions.

DESCRIPTION: Two-place, single engine light observation helicopter used as an interim scout.
MANUFACTURER: Bell Helicopter Textron.
POWER PLANT: Allison T63-A-700 turbine engine with 317 horsepower at takeoff and 270 continuous horsepower.
ROTOR SYSTEM: Two-bladed semi-rigid main rotor, 35' 4" diameter; two-bladed tail rotor of 5' 2" diameter.
SPECIFICATIONS: Fuselage length: 32' 3.5". Height: 9' 6.5" Maximum gross wt (C): 3,200 lbs. Empty wt: 1,930 lbs. Armor: 112 lbs. Cargo volume: 40 cubic feet. Fuel: 70 gals.
PERFORMANCE (Observation Mission): Maximum allowable airspeed: 121 knots. Maximum cruise speed (Sea level to 4,000 feet): 102 knots. Cruising range: 345 nautical miles. Hover ceiling (OGE): 5,400; (IGE): 10,500 feet. Endurance: 3.5 hours. Rate of climb: 1,200+ fpm.
REMARKS: As an interim scout, 585 OH-58A's have been modified to the "C" configuration, and have new T63-A-720 turbine engines, flat plate windshields, IR suppression, redundant tail rotor controls, and improved transmission and driveshaft covers to protect hangar bearings and tail rotor driveshafts. In performing its roles, the Kiowa will operate in air cavalry, attack helicopter, and field artillery units. Under the **Army Helicopter Improvement Program (AHIP)**, Bell will modify and anticipated 578 OH-58A's to the OH-58D advanced scout configuration. The "D" model incorporates a mast-mounted sight, fully integrated multiplexed cockpit, a four bladed composte main rotor and a power matched drive train with an Allison 250-C30R engine and Bell's "Run Dry" capable main transmission.

R-4 (1942)

Sikorsky Aircraft. First 'copter to be procured in quantity. Firt obtained in FY 1942. 134 purchased ranging through "C". Two-place, side-by-side. 165, 180, 200 hp. Used for observation, recon, and med evacuation.

R-5 (H-5) (1944)

Sikorsky Aircraft. The first **XR-5** in 1944 was a tandem rotor model, the **VS-272;** all others were single rotor. 132 procured in 11 models; later redesignated as the **H-5.** Powered by a P&W R-985-AN-5 540 horsepower engine.

R-6 (1945)

Sikorsky Aircraft/Nash Kelvinator. 225 of the Sikorsky design produced by N/K in 1944. All except D had 450 hp P&W R-985-AN-5 engines; D had a 600 hp P&W R-1340 engine. Used primarliy by US Navy and Coast Guard.

XCH-62 HLH

Boeing Vertol. 1974 R&D heavy lift project. Loads of 35-tons + lifted at 150 knots. First aircraft designed for "fly-by-wire." Powered by three Allison T701 turboshaft engines of 24,000 total shp. Program cancelled in 1976.

TH-55 OSAGE

DESCRIPTION: Two-place side-by-side, dual control primary trainer helicopter.
MANUFACTURER: Hughes Tool Company, Aircraft Division, Culver City, California.
POWER PLANT: One Lycoming HIO-360-B1A engine of 180 horsepower.
ROTOR SYSTEM: Single three-bladed main rotor, 25' 4" dia.; two-bladed metal anti-torque rotor, 3' 4".
SPECIFICATIONS: Gross Wt: 1,600 lb. Empty Wt: 1,010 lb. Useful load: 590 lb. Length: 28' 5". Height: 8' 3".
PERFORMANCE: Max speed (SL): 75 knots. Cruising speed (SL): 66 knots. Hover (OGE): 4,000 ft. (IGE): 6,400 ft. Max range: 235 n.m.. Endurance: 2.5 hrs. Rate of climb: 1,350 fpm.
REMARKS: The TH-55A (formerly designated as the HO-2) was purchased off-the-shelf after Army tests and evaluation by the Army. Commercially known as the Hughes 200, the Osage was initially procured in Nov

'64 with some 860 TH-55A's eventually being purchased. Features: 360-degree visibility, 8-foot ground-to-rotor clearance; low vibration and noise; and well-designed skids to absorb hard student landings.

16H-1C

DESCRIPTION: Eight-place developmental shaft compound, ring-tail helicopter.
MANUFACTURER: Piasecki Aircraft Corporation, Philadelphia, Pennsylvania 19153.
POWER PLANT: One General Electric Company T-58-5 turbine engine of 1,500 shaft horsepower.
ROTOR SYSTEM: Fully-articulated 3-bladed main rotor, 44 dia.; 3-bladed controllable pitch ducted tail-prop for forward propulsion and anti-torque directional control.
SPECIFICATIONS: Empty wt: 4,800 lb. STOL Gross wt: 8,150 lb. Disc loading: 5.36 lb./sq ft. STOL Gross wt: 10,800 lb.
PERFORMANCE: Max speed (SL): 182 knots. Cruising speed (SL): 66 knots at 80% Takeoff power. Service ceiling: 18,700 ft. Hover ceiling (OGE): 7,800 ft. Maximum range: 235 n.m.
REMARKS: Developed initially by the Piasecki Aircraft Corporation as a private company-funded project using the 16H-1 Pathfinder project name, this compound aircraft was later modified to the Pathfinder II under a joint Army-Navy contract to explore high speeds in rotary wing aircraft..

ABOVE: A Huey prepares to splashdown.

RIGHT: Three Hueys in a tight formation.

BELOW: A stick of six goes out the doors

UH-1 IROQUOIS

DESCRIPTION ("H"): 13-place tactical transport helicopter.
MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.
POWER PLANT: Avco Lycoming T53-L-13 turbine engine, 1,400 shaft horsepower.
ROTOR SYSTEM: Two-bladed semi-rigid metal 48 ft. dia. main rotor; two-bladed semi-rigid metal tail rotor, 8'6" dia.
SPECIFICATIONS (H): Gross weight: 9,500 lbs. Empty weight: 5,210 lbs. Length: 41' 11". Height: 11' 9". Fuel: 211 gal. External cargo: 4,000 lbs. Internal cargo: 220 cu. ft.
PERFORMANCE: Max cruise speed (SL): 111 knots. Maximum endurance: 3.4 hours.
REMARKS: A major Army asset since its initial procurement in 1959, the UH-1 series has evolved through 13 models (A through V). Starting its career as a med evac aircraft, the Huey has flown more than 20 million flight hours in supporting a wide variety of Army missions. From the 7-place UH-1A of 1959-1961 (173 purchased), the Army procured 1,033 nine-place B's during 1961-1965 and 749 C's/M's during 1965-1967. More than 7,534 D's/H's have been bought since 1963. The Army's utility fleet of today is composed of 90% H's and 10% B's, C's, and M's with 82% operating from Division Forward. The "Slick" was the backbone of all airmobile combat operations in Vietnam. The last production H for the U.S. Army was delivered in Dec. '76 with the average fleet age at eleven years now. The UH-1H recently returned to production for foreign military orders.

UH-2

DESCRIPTION: A compound version of the six- to thirteen-place UH-2 general utility helicopter.
MANUFACTURER: Kaman Aircraft Corporation, Bloomfield, Connecticut.
POWER PLANT: One General Electric T58-8 turbine engine of 1,250 shaft horsepower, and one GE J-85 turbojet of 2,500 lb/thrust for auxiliary propulsion.
ROTOR SYSTEM: Single four-bladed main rotor of 44 feet diameter; and a three-bladed tail rotor of 9 feet, 4 inches diameter.
SPECIFICATIONS: Gross Weight: 8,637 pounds. Empty Weight: 6,100 pounds. Length: 52 feet, 6 inches. Height: 13 feet, 7 inches.
PERFORMANCE: Maximum speed (Sea level): In excess of 197 knots. No other performance figures are available.
REMARKS: The UH-2 compound Seasprite helicopter was flown in 1965 under a joint Army-Navy test program to investigate the high speed potential of the Seasprite rotor system. The UH-2 compound is basically a UH-2 with stub wings and auxiliary jet engine added.

UH-19 CHICKASAW

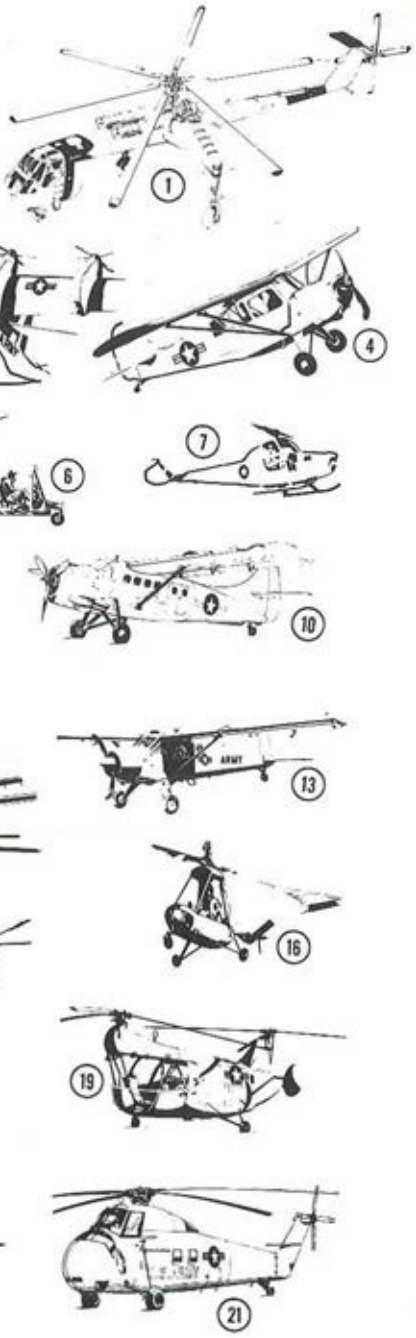
DESCRIPTION: Twelve-place utility and light tactical helicopter.
MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut.
POWER PLANT ("D"): One Curtiss-Wright R-1300-3 piston engine of 700 horsepower; the A and C models used a 550 horsepower Pratt & Whitney R-1340-57 engine.

ROTOR SYSTEM: Single three-bladed main rotor of 53 foot diameter; metal two-bladed tail rotor of 8 foot diameter.
SPECIFICATIONS: Fuselage length: 41 feet, 2 inches. Height: 15 feet, 6 inches. Empty weight: 5,250 lb. Gross weight: 7,500 lb.
PERFORMANCE: Max speed (SL): 98 knots. Cruising speed (SL): 80 knots. Service ceiling: 10,600 ft. Hover ceiling (OGE): 2,300 ft. Max range: 414 n.m. Endurance: 4.3 hrs. Rate of climb: 1,020 fpm.
REMARKS: The world's first transport helicopter and the first to be used for commercial scheduled service. Crew of two plus six litters and one medical orderly, or ten passengers. Since its initial procurement in Nov 1949, 355 Chickasaws were brought into the Army inventory through FY 1965.

WOTIZZ?

IT'S QUIK QUIZ #2.

Are you sharp in recognizing the not-so-well known aircraft designs that have graced our magazine pages over the years? If you can name either the model number or the year in which 12 of the 21 models pictured were produced, consider yourself an aviation intellectual. The answers appear on Page 113.



BELOW: Slope landing test.

UH-60A BLACK HAWK

BELOW: Hooking up at Fort Campbell

LEFT: 105mm howitzer in tow

DESCRIPTION: 14-place combat assault helicopter. Crew of three and 11 fully equipped troops, four stretcher patients, internal cargo, or 8,000 pounds of slung cargo.

MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut.

POWER PLANT: Two General Electric T-700 turboshaft engines, 1,543 shaft horsepower.

ROTOR SYSTEM: Composite (titanium and fiberglass) four-bladed main rotor 53' 8" diameter.

SPECIFICATIONS: Mission gross weight: 16,450 lbs. Gross weight: 20,250 lbs. Length: 50' ¾".

PERFORMANCE: Maximum speed: 160 knots. Hover ceiling (OGE): 10,400 ft; (IGE): 14,700 ft. Service ceiling: 17,690 ft. Range: 429 nautical miles. Rate of climb: 450 fpm. Required endurance: 2.3 hours.

REMARKS: Following an extensive, exhaustive, and highly competitive test and evaluation, the Sikorsky UTTAS (Utility Tactical Transport Aircraft System) was selected by the Army from a field of five companies on December 23, 1976 with eventual production to exceed 1,100 aircraft. Now procured under a multiyear FY 85-87 contract, BLACK HAWK units are based in CONUS, Europe, South Korea and Panama.

XH-15

DESCRIPTION: Four-place (pilot and three passengers) experimental observation-utility helicopter.
MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.

POWER PLANT: One Continental XO-470-5 turbo-supercharged engine of 275 horsepower.
ROTOR SYSTEM: Single two-bladed rotor system, wooden blades, 36 feet, 10 inch diameter.
SPECIFICATIONS: Length: 43 feet. Gross weight: 2,700 pounds.
PERFORMANCE: Maximum speed (Sea level): 87 knots. Service ceiling: 20,000 feet. No other mission data is available in that only experimental work was completed.
REMARKS: In FY 1950, the Army Air Forces procured three Bell XH-15 helicopters for service test and evaluation. Because the aircraft never became a production article, many of the operational parameters were never firmly established. The XH-15 was designed as a high altitude helicopter for the USAF and was the first helicopter to incorporate a turbo-supercharged engine.

XH-17

DESCRIPTION: Three-place heavy lift research helicopter.
MANUFACTURER: Hughes Helicopters, Division of Summa Corporation, Culver City, California.

POWER PLANT: One TG-80 (J-36) modified gas turbine engine of 3,480 horsepower.
ROTOR SYSTEM: Single two-bladed metal main rotor of 168 foot diameter and 68-inch chord.
SPECIFICATIONS: Gross Weight: 47,500 pounds.
PERFORMANCE: This was a test aircraft and no performance data is available.
REMARKS: This was the first effort to prove to prove the feasibility and the advantages of jet power for rotary wing aircraft. Built and demonstrated by Hughes, the XH-17 was procured by the USAF in 1952 and flew numerous tests through 1955. All evaluation data was supplied to the Army with invaluable knowledge of jet engine installation, complex ducting, and pressurized structures being "fallout." The project was initially launched by Kellett Aircraft and and later taken over by Hughes Helicopters.

XH-51A

DESCRIPTION: Two-place developmental rigid-rotor compound research helicopter.
MANUFACTURER: Lockheed-California Company, Burbank, California.
POWER PLANT: One UA of Canada PT-6B-6 550 shp turbine engine; P&W J60-P2 turbojet of 2,900 lb/thrust for auxiliary propulsion.
ROTOR SYSTEM: Single four-bladed Lockheed rigid-rotor, 35' dia; 6' tail rotor.
SPECIFICATIONS: Fuselage length: 32 ft, 10 in. Height: 8 ft, 2 in. Empty wt: 4,000 lb. Gross wt: 4,500 lb. Retractable landing gear.
PERFORMANCE: Max speed (SL): 153 knots. Cruising speed (SL): 126 knots. Hover ceiling (OGE): 7,000 ft. Max range: 330 n.m. Endurance: 2.7 hrs. Rate of climb: 1,850 fpm.
REMARKS: The XH-51A compound helicopter was developed under a joint Army-Navy contract as a research vehicle for high performance rotary wing aircraft, completing its first flight in November 1962. The XH-51N has PT6B-9 550 shp engine, three-bladed rigid rotor, gross weight of 3,500 lbs, and 2,650 lb. empty weight. Lockheed also developed a commercial model of the XH-51 designated as its Model 286.

YH-16

DESCRIPTION ("B") : 50-place tandem rotor, heavy cargo helicopter. "A" was 44-place aircraft first designated as the H-27.
MANUFACTURER: Piasecki Aircraft Corporation, Philadelphia, Pennsylvania.
POWER PLANT: Two T-56-A5 Allison turbine engines of 2,100 hp. Initial YH-16A (H-27) had two Allison T-38-A3 engines.
ROTOR SYSTEM: Tandem four-bladed metal fully-articulated rotor system. Diameter: 82 feet.
SPECIFICATIONS: Gross weight: 46,700 pounds.
PERFORMANCE: Cruise speed (Sea level): 125 knots. Service ceiling: 15,600 feet. Maximum range: 230 nautical miles.
REMARKS: The Army procured two Piasecki YH-16 cargo helicopters for test and evaluation purposes, the second H-16 being an "A" model employing the Allison T38 turbine engine. The project was terminated in 1956.

TEST YOURSELF!

More than 200 aircraft are pictured on the "Equipment Issue's" 120 pages. **Do you pride yourself on your aircraft recognition capability?** If so, turn to page 93 for **QUICK QUIZ #2.**

AH-64A APACHE

DESCRIPTION: Two-place, twin engine advanced attack helicopter.
MANUFACTURER: Hughes Helicopters Inc., Culver City, California.
POWER PLANT: Two General Electric T700-GE-701 turboshaft engines of 1,694 shaft horsepower each.
ROTOR SYSTEM: Four-bladed articulated main rotor, 48 feet diameter, with static mast; four bladed tail rotor.
SPECIFICATIONS: Gross weight: 18,500 lbs. Length: 49' 5".
PERFORMANCE (Primary Mission): Cruise speed (SL): 160 knots TAS. Maximum forward speed: 197 knots. Sidewards and Rearwards: 45 knots. Max gross weight: 14,694 lbs. Endurance(SL): 2.63 hours. Max Endurance: 3.10 hours. Sustained rate of climb: 3,150 fpm.
REMARKS: This winner of the 1983 Collier Trophy was selected after a competitive flyoff in December 1976. The APACHE received its production go ahead in March '82, with the first of 315 contracted aircraft delivered in January '84. The Army currently plans to acquire 675 APACHES. A potential anti-helicopter helicopter, the AH-64A with its TADS target acquisition capability and its HELLFIRE missiles, is regarded as "the most lethal and survivable helicopter in aviation history." With the latest couter-measures systems, withering firepower, and an around-the-clock capability, the APACHE as an addition to the Combined Arms Team, is a formidable anti-tank weapon and a deadly deterrent to any enemy force.

YH-18A

DESCRIPTION: Four-place (pilot and three passengers) utility helicopter.
MANUFACTURER: Sikorsky Aircraft Division, Stratford, Connecticut.
POWER PLANT: One Franklin 0-425-1 piston engine of 245 horsepower.
ROTOR SYSTEM: Single three-bladed metal main rotor, 33 feet in diameter; two-bladed metal tail rotor of 5 feet, 5 inch diameter.
SPECIFICATIONS: Length: 35 feet. Height: 8 feet, 6 inches. Gross weight: 2,700 pounds. Four-wheel landing gear.
PERFORMANCE: Maximum speed (Sea level): 96 knots. Cruising speed (Sea level): 81 knots. Service ceiling: 13,800 feet. Hover ceiling (OGE): 1,100 feet. Maximum range: 351 nautical miles. Endurance: 3.5 hours. Rate of climb: 1,050 feet per minute.
REMARKS: The Army obtained four Sikorsky Aircraft YH-18A's for service test and evaluation in FY 1980.

YH-41 SENECA

DESCRIPTION: Four-place observation helicopter.
MANUFACTURER: Cessna Aircraft Company, Wichita, Kansas.
POWER PLANT: One Continental FSO-526 horizontally piston engine of 270 hp.
ROTOR SYSTEM: Single two-bladed metal main rotor, 35' ft dia. Two-bladed metal tail rotor, 7 ft. dia.
SPECIFICATIONS: Gross Wt: 3,000 lb. Empty wt: 2,050 lb. Length: 42' 5". Height: 8' 5".
PERFORMANCE: Max speed (SL): 107 knots. Cruise: 105+ knots. Hover ceiling: 14,500 ft. (OGE): 6,500 ft. Max range: 357 nm. Endurance: 3.37 hrs. Rate of climb: 1,030 fpm.
REMARKS: The Army procured ten H-41 helicopters in 1957 for high altitude operation test and evaluation. None were boughtafter that date. The initial two YH-41 of the evaluation quantity went to Edwards AFB; the remainder were sent to Ft. Rucker.

In Dec '57 a YH-41, with Army CPT James E. Bowman as pilot, broke the then world altitude records for helicopters in two categories (under 2,204 lbs. and unlimited weight) reaching approximately 30,300 feet.

YHC-1

DESCRIPTION: 28-place medium transport helicopter.
MANUFACTURER: Boeing Vertol Division, Morton, Pennsylvania.
POWER PLANT: Two General Electric Company T58-6 turbine engines of 1,050 shaft horsepower each.
ROTOR SYSTEM: Tandem three-bladed rotor system. The rotor diameter was 48 feet, 4 inches.
SPECIFICATIONS: Gross Weight: 18,700 pounds. Empty Weight: 11,716 pounds. Length: 44 feet, 7 inches. Height: 16 feet, 10 inches.
PERFORMANCE: Maximum speed (Sea level): 147 knots. Cruise speed (Sea level): 136 knots. Service ceiling: 13,700 feet. Hover ceiling (OGE): 6,500 feet. Maximum range: 132 nautical miles. Rate of climb: 1,700 feet per minute.
REMARKS: The U.S. Army procured three YHC-1's in 1959 for service test and evaluation. Engineering and operational data obtained from this aircraft led to the later development of the company-funded Boeing 107, the CH-46, and the CH-47 Chinook.

YUH-1B

DESCRIPTION: High Performance Research compound helicopter.
MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.
POWER PLANT: One Lycoming T53-L-11 turbine engine of 1,100 shaft horsepower and two J69-T27 turbojet engines of 1,260 pound/thrust each.

ROTOR SYSTEM: Single two-bladed main rotor with tapered blade tips, 44 foot diameter. Two-bladed tail rotor.
SPECIFICATIONS: Basically the UH-1B with modifications for mounting the two turbojet engines, two stub wings, and additional fairings around the mast and cross tubes. Overall length: 53'. Fuselage length: 42' 7". Height: 12' 8".
PERFORMANCE: The YUH-1B was flown in excess of 219 mph in level flight during 1963-1964 time frame.
REMARKS: Developed under a joint Bell-U.S. Army Transportation Research Command (TRECOM), the YUH-1B test bed flew with a three-bladed rigid rotor, three-bladed gimbal-mounted rotor, and standard semi-rigid rotor.

RSRA

DESCRIPTION: Multi-purpose 3-place flying test bed designed to flight test current and advanced rotor systems.
MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut.

POWER PLANT: Two GE T58-GE-5 turbines of 1,400 horsepower each. Compound has two auxiliary TF34-GE-400A turbofans with 9,275 lb. maximum thrust.
ROTOR: 5-bladed, 62 feet diameter; 5-bladed, 10.67 feet diameter tail rotor.
SPECIFICATIONS: Span: 45'-½". Fuselage length: 70'-7". Height: 17'-10". Design gross weight: 18,400 lb. Yankee extraction seat. Controls: Fly-by-Wire Primary with Mechanical Back-up. Compound: 26,200 lb. design gross weight.
PERFORMANCE: Maximum speed (Sea level): 160 knots. RSRA Compound: 300 knots.
REMARKS: RSRA represents a significant advance in R/W technology by virtue of its adaptability to a wide variety of gimbaled, articulated, and hingeless rotors. RSRA is the first R/W aircraft to be built with a blade severance/ crew escape system.

UNFLYABLES

RIGHT: Not a gag but a real nuts-and-bolts creation of the Maintenance Section of "The Real Cal" — B Troop, 7/17th Air Cavalry Squadron. The "OH-6C" underwent a few additions (nose gun and side-by-side rocket pods) while "The Real Cav" was in the Pleiku area in early 1972. CWO Bill C. Walton submitted the photograph of this "Unflyable."

LEFT: Tested with heavy ground fire in late '70, a full-scale mockup of Sikorsky Aircraft's Aerial Armored Reconnaissance Vehicle (AARV) passed the test! Both armor-piercing and ball projectiles were used with the armor plate being dented, but not penatrated. The impact of the projectiles can be seen on the AARV's lower front fuselage.

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HZ-1DE PLATFORM

VZ-7AP JEEP

XC-142A TILT-WING

V/STOL, JEEPS, AND GEMS

1984 EQUIPMENT ISSUE

VZ-1E FLYING PLATFORM

Greater mobility for the individual soldier on scouting missions was the object of this '55 Hiller vehicle. A ducted fan, powered by three 40 hp Nelson engines, provided lift. Known as the Pawnee, the VZ-1 weighed 465 pounds.

VZ-2PH TILT WING

This Vertol VTOL (commercially called the Model 76) completed full transition from vertical takeoff to cruise and back in July 1958. Its interconnected propellers were powered by a 600 hp Lycoming turbine (T53-L-1A).

VZ-3RY DEFLECTED SLIPSTREAM

Called the Vertiplane by Ryan, the VZ-3 employed two propeller-deflected slipstreams aided by a high-flapped wing. Its interconnected propellers were powered by a T-53-L-Lycoming 825 hp turbine in the fuselage.

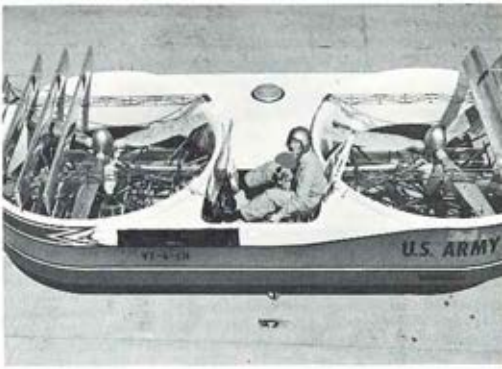
VZ-4DA DUCTED PROPELLERS

The Doak Aircraft two-place convertiplane's ducted props in its wing-tips rotated through 90° to convert the plane in flight. The Model 16 used one 825 hp T-43-L-1 turbine engine with its interconnected propellers.

VZ-5FA DEFLECTED SLIPSTREAM

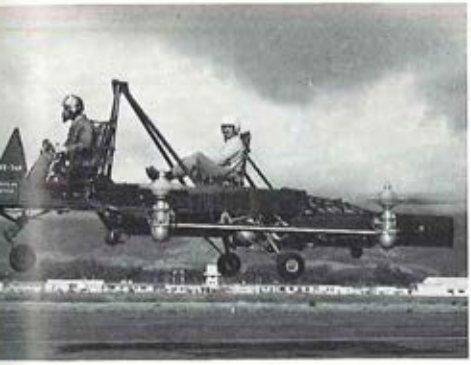
This one-place research aircraft by Fairchild achieved VTOL by deflecting the slipstream downward by means of a high-flapped wing. Four interconnected props were powered by one 1,100 hp GE T-58-2A turbine engine.

VZ-6CH DUCTED PROPELLERS



A single place research aircraft designed by Chrysler to explore the aerial jeep concept. The shafting from a single 380 horsepower reciprocating engine transmitted the power to the aircraft's two ducted propellers.

VZ-7AP DUCTED FAN

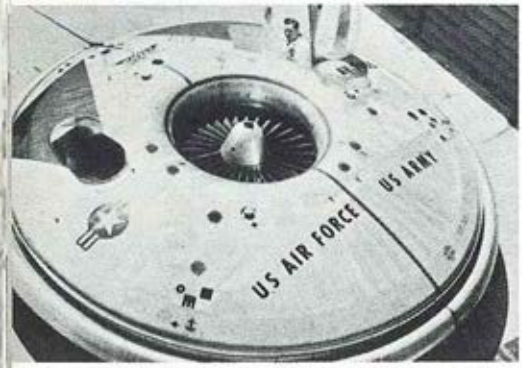


This aerial jeep research vehicle was originally designed and constructed by the Curtiss-Wright Corporation and utilized four ducted fans. Later, the ducts were removed. Power came from one Artouste II turbine engine.

VZ-8PB DUCTED FAN

An aerial jeep powered by two Artouste II turbine engines. Built by Piasecki Aircraft, the VZ-8PB derived lift from two three-bladed rotors. An earlier version, utilizing a single turbine, made its first flight in 1958.

VZ-9A AVROCAR GEM

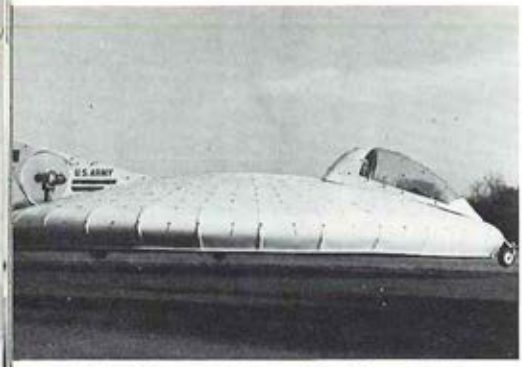


Designed to explore VTOL techniques, this vehicle operated in ground effect only. Developed by AVRO Aircraft of Canada, the VZ-9A Ground Effects Machine was a joint project of the U.S. Army and the USAF.

CURTISS-WRIGHT AIRCAR

A four-place Ground Effects Machine (GEM) designed by the Curtiss-Wright Corporation to skim six to 12 inches off the ground at speeds up to 35 mph. Two of these machines were bought "off-the-shelf" for research.

PRINCETON GEM



This Ground Effects Machine (GEM) was designed and built by Princeton University under U.S. Army contract to study the GEM phenomenon and particularly the problems of stability and control.

HZ-1DE FLYING PLATFORM

Another flying platform design, the DeLackner provided data on an unducted propeller concept. A later version used metal skids instead of outriggers — inflated bags. A 4 hp Mercury Mark 55 marine outboard engine.

VZ-10 (XV-4A) HUMMINGBIRD

DESCRIPTION: Experimental augmented jet ejector VTOL aircraft.
MANUFACTURER: Lockheed-Georgia Company, Marietta, Georgia
POWER PLANT: Two Pratt & Whitney JT-12 turbo jets of 3,300 lbs. thrust each with 40% augmentation for a total of 8,300 lbs. thrust in the VTOL mode.
LIFT SYSTEM: The aircraft achieved vertical flight by diverting the high velocity jets from both engines through a series of nozzles and ducts into mixing chambers in the center of the fuselage and thence downward toward the ground. Bomb bay-type doors in the top and bottom of the fuselage opened to expose the mixing chambers and nozzles.
SPECIFICATIONS: Span: 25' 10". Length: 33'. Height: 11' 9". Empty wt: 5,000 lb. VTOL gross wt: 7,200 lb.
PERFORMANCE: Max speed (SL): 579 knots. Service ceiling: 50,000 ft. Max range: 1,059 nm. Rate of climb: 18,000 fpm.
REMARKS: The Army procured two test models; one was destroyed in an accident. In mid-1966, the USAF took over XV-4A operational control.

XV-5A VERTIPLANE

DESCRIPTION: Experimental fan-in-wing aircraft.
MANUFACTURER: Ryan Aeronautical Company, San Diego, California.
POWER PLANT: Two GE J85-5 turbines of 2,650 shaft horsepower each.
LIFT SYSTEM: The aircraft gets its vertical lift from downward thrust produced by two five-foot diameter fans submerged in the wings. The fans are powered by the exhaust from the engines.
SPECIFICATIONS: Span: 29 feet, 9 inches. Height: 14 feet, 8 inches. Empty weight: 7,500 pounds. VTOL Gross weight: 12,500 pounds. STOL Gross weight: 15,500 pounds.
PERFORMANCE: Maximum speed (Sea level): 478 knots. Cruising speed (30,000 feet): 386 knots. Service ceiling: 45,000 feet. Hover ceiling (OGE): 12,000 feet. Maximum range: 1,381 nautical miles. Rate of climb: 9,500 feet per minute.
REMARKS: Two XV-5As were built under the Army program; one being destroyed in an accident. Transition to forward flight was accomplished by vectoring control vanes (louvers) mounted under the back wing fan.

XV-6A
HARRIER

DESCRIPTION: One-place vectored thrust V/STOL strike-reconnaissance fighter aircraft (First designated the P.1127, then the "Kestrel", the the Harrier.)
MANUFACTURER: Hawker Siddeley Aviation, Ltd., Kingston-Upon-Thames, England.
POWER PLANT: One Bristol Siddeley Pegasus engine of 15,500 pounds/thrust.
SPECIFICATIONS: Span: 22 feet, 10 inches. Length: 42 feet, 4 inches. Height: 10 feet, 8 inches. Empty weight: 13,159 pounds. Gross weight: 23,500 pounds.
PERFORMANCE: Maximum speed (Sea level): Mach +. Cruise speed (Sea level): 0.89 Mach. Cruise speed, 10,000 feet: 0.90 Mach. Service ceiling: 45,000 feet. Maximum range: 1,992 nautical miles. Endurance: 2.75 hours. Rate of climb: 13,000 feet per minute.
REMARKS: In 1961 the U.S. Army procured three of the nine XV-6As in the Tripartite Squadron and later took control of the three F.R.G. aircraft. The six XV-6As underwent tri-service evaluation in the U.S. in early 1966. A later version has been employed by the USMC. The aircraft has exceeded the speed of sound in forward flight.

XV-8A
FLEEP

DESCRIPTION: One-place flex-wing utility man-carrying vehicle designed to demonstrate the para-glider concept.
MANUFACTURER: Ryan Aeronautical Company, San Diego, California.

POWER PLANT: One Continental pusher piston engine of 210 horsepower.
SPECIFICATIONS: Span: 33 feet, 5 inches. Length: 26 feet. Empty weight: 1,029 pounds. Gross weight: 2,359 pounds.
PERFORMANCE: Maximum speed (Sea level): 71 knots. Cruising speed (Sea level): 48 knots. Maximum range: 153 nautical miles.
REMARKS: Developed and wind-tunnel proven by Francis M. Rogallo, a NASA aeronautical engineer at the Langley Research Center, the paraglider began as a flexible, high performance tail-less toy kite. Later, Ryan Aeronautical was awarded a 30-hour flight test contract to prove the flight envelope with the first flight being completed in March 1961. The hang-gliders in use today stem from the development of the Rogallo Wing and Army-funded R&D on this program.

UV-18 TWIN OTTER

DESCRIPTION: 21-place high-wing "command administrative, logistical, and personnel" STOL aircraft capable of operating on wheels, wheel-skis, floats, or high-flotation tires.

MANUFACTURER: De Havilland Aircraft, Limited, Downsview, Ontario, Canada.
POWER PLANT: Pratt & Whitney of Canada PT6A-20 turboprop of 579 shp.
SPECIFICATIONS: Span: 65 ft. Length: 51 ft, 9 in. Gross wt: 12,500 lbs.
PERFORMANCE: Cruising speed (SL): 184 knots. Service ceiling: 26,700 feet. Range: 928 nautical miles. Max T.O wt: 12,500 lbs. Rate of climb: 1,600 fpm. T.O. run: 860 ft. Landing run: 950 ft.
REMARKS: Joining the Alaska Army National Guard in 1970, the highly successful DHC-6 Twin Otter provided ARNG forces with a a multi-mission capability. On observation or search and rescue missions, the UV-18A can fly for more than six hours. Easily handled at only 129 knots, the aircraft can drop men and supplies by parachute with great precision. Its double-slotted flaps and ailerons provide safe, steep, visible descents.

ANSWERS TO QUIK QUIZ #1

- 1. McDONNELL AIRCRAFT... XH-20 AAF PURCHASE..... 1952
- 2. BELL HELICOPTER..... H-12 AAF PURCHASE..... 1947
- 3. BELL..... TWIN-ENGINE UH-1D..... 1966
- 4. KAMAN AIRCRAFT..... HOK-1 PROPOSAL..... 1957
- 5. DEL MAR..... DH-2C TARGET DRONE..... 1966
- 6. BELL AEROSYSTEMS..... X-14 TWIN DUCT..... 1959
- 7. DEL MAR..... WHIRLYMITE R/W TRAINER..... 1966
- 8. FAIRCHILD-HILLER..... TURBO-PORTER (PILATUS)..... 1964
- 9. BELL AEROSYSTEMS. CARABAO GEM..... 1963
- 10. GOODYEAR..... INFLATO-PLANE..... 1959
- 11. AGUSTA..... 109 ASH PROPOSAL..... 1979
- 12. VERTOL..... SIX-ENGINE V/STOL AIRCRAFT
- 13. RYAN AERONAUTICAL.... DISC-ROTOR..... 1966
- 14. CANADAIR..... CL-84 TILT-WING..... 1965
- 15. BOEING VERTOL..... YUH-61A UTTAS PROPOSAL..... 1976
- 16. BELL..... WINGED HELICOPTER..... 1963
- 17. PIASECKI..... 16H-1B PATHFINDER..... 1964
- 18. SIKORSKY..... VH-3A WHITE HOUSE AIRCRAFT..... 1962
- 19. BEECH..... L-23 WITH FUEL TANK OUTRIGGERS..... 1962

HOW DID YOU DO? IDENTIFYING TEN OR MORE OF THE 19 PICTURED AIRCRAFT MODELS OR KNOWING THEIR MAIDEN YEAR PLACES YOU IN THE "AVIATION INTELLECTUAL" CATEGORY. IF YOU IDENTIFIED FIVE TO NINE PHOTOS, YOU'RE SHARP! IF YOU COULD ONLY LABEL FOUR OR LESS, AVIATION AIN'T YOUR THING!

XV-9A
HOT CYCLE

DESCRIPTION: Two-place hot cycle research helicopter.
MANUFACTURER: Hughes Helicopters, Culver City, California.
POWER PLANT: Two General Electric Company YT64 gas generators with the main rotor being driven by tip propulsion.
ROTOR SYSTEM: Single three-bladed main rotor. Rotor diameter: 55 feet.
SPECIFICATIONS: Fuselage Length: 45 feet. Height: 12 feet. Empty weight: 8,600 pounds. Gross weight: 15,300 pounds. Overload gross weight: 25,500 pounds.
PERFORMANCE: Maximum speed (Sea level): 121 knots. Cruising speed (Sea level): 80 knots. Cruise speed, 5,000 feet: 80 knots. Service ceiling: 17,300 feet. Hover ceiling (OGE): 13,200 feet. Rate of climb: 2,000 feet per minute.
REMARKS: In September 1962, the Army procured one XV-9A for research and evaluation. Fuselage-mounted turbojets supplied high energy gas through ducts to the blade tips to drive the rotor. Light ducting was substituted for heavy, complex power turbines, gear boxes, shafting, and tail rotor.

X-19
TILT WING

DESCRIPTION: Six-place high-wing tilt-prop experimental V/STOL aircraft.
MANUFACTURER: Curtiss-Wright Corporation, Wood-Ridge, New Jersey.
POWER PLANT: Two Lycoming T55-L-7 turbine engines of 2,650 shaft horsepower each mounted at the top of the aft fuselage.
PROPELLERS: Four Curtiss-Wright plastic 3-bladed propellers cross-shafted and mounted on the ends of two stub wings. 13 foot diameter.
SPECIFICATIONS: Span: 34 feet, 6 inches. Length: 44 feet, 5 inches. Height: 17 feet. Empty weight: 9,750 pounds. Gross weight in VTOL mode: 13,660 pounds. Gross weight in STOL mode: 14,750 pounds.
PERFORMANCE: Maximum speed at sea level: 403 knots. Cruising speed at sea level: 350 knots. Maximum range: 599 nautical miles. Rate of climb: 3,250 feet per minute. Other performance data unavailable.
REMARKS: Two X-19 aircraft were procured under a tri-service test and evaluation contract managed by the U.S. Air Force. Prior to termination of the program, one X-19 was destroyed in an accident in late 1965.

X-22A
DUCTED FAN

DESCRIPTION: Eight-place V/STOL research aircraft.
MANUFACTURER: Bell Aerosystems Company, Buffalo, New York.
POWER PLANT: Four General Electric YT58-GE-8D turboshaft engines of 1,250 horsepower each mounted on aft wing.
PROPELLERS: Four three-bladed Hamilton Standard cross-shafted propellers of 7-foot diameter each.
SPECIFICATIONS: Span: 39.2 feet. Length: 39.6 feet. Height: 20.7 feet. VTOL gross weight: 16,274 pounds.Maximum gross: 18,016 pounds. STO over 50 feet. obstacle: 720 feet.
PERFORMANCE: Maximum speed (Sea level): 282 knots. Hover ceiling: 11,000 feet. Range: VTOL, 523 nautical miles; STOL, 788 nautical miles. Endurance: 4.4 hours.
REMARKS: Tri-service program under a Navy-administered contract. Roll-out took

place on May 25, 2965 with maiden hovering flight on March 17, 1966. STOL completed on June 30, 1966 with first VTOL, transition to conventional flight, and return to VTOL on March 1, 1967.

XC-142A
TILT WING

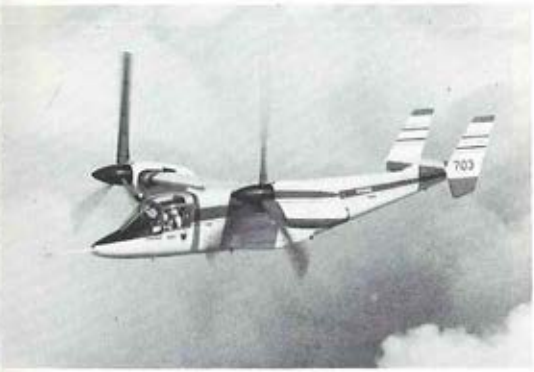
DESCRIPTION: 35-place, tilt-wing, deflected slipstream V/STOL medium transport aircraft.
MANUFACTURER: LTV Aerospace Corporation, Dallas, Texas.
POWER PLANT: Four General Electric T64-6 turboprops of 3,080 shaft horsepower each.
PROPELLERS: Four four-bladed Hamilton Standard cross-shafted propellers of 15' 6" diameter each. Three-bladed tail rotor for longitudinal control at low speeds.
SPECIFICATIONS: Span: 67 feet, 6 inches. Length: 58 feet. Height: 26 feet. Empty weight: 23,000 lb. Gross weight, STOL: 41,500 lb. Gross weight, VTOL: 37,500 lb.
PERFORMANCE: Maximum speed (Sea level): 377 knots. Cruise speed (Sea level): 250 knots. Cruise speed, 10,000 feet: 303 knots. Service ceiling: 25,000 feet. Hover ceiling (OGE): 6,000 feet. Maximum range: 529 nautical miles. Endurance: 6.5 hours. Rate of climb: 6,800 feet per minute.
REMARKS: Five XC-142A's were built under a tri-service developmental program with Hiller Aircraft and the Ryan Aeronautical Company as associate contractors.

ABC (XH-59A)

DESCRIPTION: Advancing Blade Concept (ABC) research helicopter.
MANUFACTURER: Sikorsky Aircraft, Stratford, Connecticut.
POWER PLANT: Twin P&W PT6 engines of 1,825 hp each. Aux propulsion: two outboard P&W J60 engines with 3,000 lb. add'l thrust.
ROTOR SYSTEM: Two three-bladed, counter-rotating, coaxial, rigid rotors, 36 ft. dia.
SPECIFICATIONS: Overall length: 41'-5". Height: 12'-11". Design gross weight: 9,000 lb; aux. version: 11,100 lb.
PERFORMANCE (Aux): Max speed (SL): 160 kph (Aux: 437 kph). Service ceiling: 14,000 feet. Hover ceiling: 6,700 feet.
REMARKS: Currently a tri-Service/ NASA-Sikorsky-funded program. ABC flight testing began July 1975 with modification into a compound following. In April 1980 the compound reached 237 miles per hour. ABC's counter-rotating rotors on a common main shaft permit the advancing side of both rotor discs to generate lift, offering the potential of 300 knot speeds without the need of a wing to offload the rotor and the need for a tail rotor.

XV-15

DESCRIPTION: NASA/ Army/ Navy tiltrotor research aircraft. 20 troops plus crew.
MANUFACTURER: Bell Helicopter Textron, Fort Worth, Texas.
POWER PLANT: Three GE T700 turbines.



ROTOR SYSTEM: Two three-bladed semi-rigid tilt-rotors of 25 foot diameter each.
SPECIFICATIONS: Fuselage length: 42'-1". Span: 32'-2". Height: 15'-4". Max gross weight: 15,000 lb. Design gross weight: 13,000 lb. Empty weight: 9,700 lb.
PERFORMANCE: Model D303 max speed (SL): approx. 300 knots. At 20,000 normal cruising altitude, cruise speed is 265 knots. One engine inoperative service ceiling: 16,000 feet at 260 knots. Two engines inoperative: 180 knots at low altitudes.
REMARKS: In April 1973, Bell received a NASA-Army contract to design, manufacture, and test two tilt-rotor aircraft, and to determine the tilt-rotor technology's potential for civil and military applications. The Navy joined the program in 1979. Rollout, 1976; first flight, 1977; first airplane mode flight, 1979. Tri-engine growth version (D303), June 1982.

HERE ARE THE ANSWERS TO QUIZ QUIZ #2

- 1. SIKORSKY AIRCRAFT.....CH-54 FLYING CRANE (HLH).....1964
- 2. BOEING AIRPLANE CO.....L-15 SCOUT (OBSERVATION AIRCRAFT)....1947
- 3. LTV AEROSPACE CORP.....XC-142A TILT-WING (MEDIUM TRANSPORT AIRCRAFT).....1964
- 4. TAYLORCRAFT MANUFACTURING..L-2 GRASSHOPPER (LIAISON AIRCRAFT)...1941
- 5. BOEING VERTOL CO.....CH-47 CHINOOK (MED LIFT HELICOPTER).....1962
- 6. SIEBEL HELICOPTER CO.....H-24 (OBSERVATION HELICOPTER).....1951
- 7. CESSNA AIRCRAFT CO.....YH-41 SENECA (UTILITY HELICOPTER).....1957
- 8. PIPER AIRCRAFT CORP.....L-14 (OBSN—MED EVAC AIRCRAFT).....1947
- 9. SIKORSKY AIRCRAFT.....CH-37 MOJAVE (MED CARGO HELICOPTER)...1956
- 10. DE HAVILLAND AIRCRAFT.....U-1A OTTER (GENERAL UTIL AIRCRAFT).....1955
- 11. BELL HELICOPTER.....OH-13 SIOUX (OBSN—MED EVAC HCPTR)....1946
- 12. BEECH AIRCRAFT CORP.....U-8F SEMINOLE (UTIL, COMMAND, LIAISON)1952
- 13. DE HAVILLAND AIRCRAFT.....U-6 BEAVER (GENERAL UTILITY AIRCRAFT)1951
- 14. HUGHES HELICOPTERS.....TH-55 OSAGE (PRIMARY TRAINER).....1964
- 15. PIASECKI AIRCRAFT CORP.....CH-21 SHAWNEE (CARGO HELICOPTER).....1950
- 16. AMERICAN HELICOPTER CO.....H-26 (OBSN—RECON AIRCRAFT).....1952
- 17. RYAN AERONAUTICAL CO.....XV-8A FLEEP (FLEX-WING PARAGLIDER).....1961
- 18. HUGHES HELICOPTERS.....OH-6 CAYUSE (LIGHT OBSN HELICOPTER)...1965
- 19. McCULLOCH MOTORS CORP....H-30 (OBSERVATION HELICOPTER).....1952
- 20. AERO COMMANDER.....U-9 (UTIL, COMMAND, LIAISON ACRFT)....1953
- 21. SIKORSKY AIRCRAFT.....CH-34 CHOCTAW (LIGHT TACT TRANSPORT)..1955

month's takeoffs

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How did more than 12,000 Army Aviators share over $2 million during the past 23 years?

They received more than $2 million in flight pay claims under the AAAA-endorsed Flight Pay Insurance Plan (FPPP).

What are your flight pay insurance plan benefits if you are grounded?

Basic Plan

Provides you with TAX-FREE indemnity payments of 80% of your current flight pay, payable each month for up to 12 months if you become grounded for illness, an ordinary accident, or a military aviation accident caused by combat action . . .and pays you up to 24 months if you are grounded for a military aviation accident not caused directly or indirectly by war or an act of war.

Added Benefit Plan

DOUBLES your standard 12 and 24 month indemnity payment periods for only about one-third more than the cost of the basic coverage.

If you choose the ADDED BENEFIT option, benefits are payable to you each month for up to 24 months if you are grounded for illness or ordinary accident or military aviation accident caused by combat action, and for up to 48 months for groundings caused by military aircraft accident not caused directly or indirectly by war or act of war.

This optional coverage, together with the plan's graduated premium scale, provides you with the maximum flight pay income protection during the years when your financial obligations are greatest.

Combat Coverage

This is all-risk combat protection against illness, wounds, an aircraft accident, or anything that's caused by a combat action with indemnities payable for up to 24 months.

Indemnities are tax-free

Your monthly indemnity checks - in the amount of 80% of your flight pay, are TAX FREE under Sec. 1.104 (d) (3) of the 1954 Internal Revenue Code. This means that your income checks are roughly equivalent to the TAXABLE flight pay income you'd normally receive from the government.

WHAT ARE THE FPPP DEATH BENEFITS?

Life Insurance

Monthly indemnity payments equal to 80% of your current flight pay will be paid to your beneficiary each month for the period shown below. The payment period is determined by your age at time of death.

Under 30	4 years
30 — 34	6 years
35 — 39	5 years
40 — 44	4 years
45 — 50	3 years
51 — 55	2 years

Exclusive Death Benefit

This death benefit — an exclusive feature of AAAA-endorsed Flight Pay Insurance — is paid to your beneficiary in the event of your natural or accidental death, except death sustained in a military aviation accident caused directly or indirectly by war or an act of war, or by hostile, police, or civil action or invasion, or resulting civil commotion or riots, or suicide, while sane or insane, within two years of effective date.

Premium Options

Premiums are payable annually, semi-annually, quarterly, or monthly by government allotment. If you select government allowment as your mode of payment, submit two month's premium along with your application. Contact your Finance Officer for Form DA 1341 to apply for the allotment.

Rates for AAAA-Endorsed Flight Pay Insurance

The Annual Premium Paid is based on a percentage of one's Annual Flight Pay

Age of Insured	Basic Protection Plan	Added Benefit Plan
Under 30	3%	4%
Age 30 and Over	4%	5¼%

Pre-Existing Illnesses

After 12 months of continuous coverage, the policy guarantees protection against groundings due to ANY AND ALL illnesses, even those pre-existing your first date of coverage, provided that your coverage is renewed from term to term without lapse.

Other facts about FPPP

All policies are dated on the first day of the month after the month in which the application is postmarked, and protection against grounding due to all accidents starts as of that date. Protection against grounding due to illness begins 30 days later.

Officer/Warrant Officer Flight Pay

Under 2 years	$125
Over 2 years	156
Over 3 years	188
Over 4 years	206
Over 6 years	400

Commissioned Officers

Over 18 years	$370
Over 20 years	340
Over 22 years	370
Over 24 & Under 25	280
Over 25*	250

*If an O-6 or under and in an operational flying job.

EXCLUSIONS

The insurance under the program shall not cover any loss to any Insured Person resulting in whole, in part from, or due to any of the following:

1. Criminal act of the Insured, or from injury occasioned or occurring while in a state of insanity, temporary or otherwise.

2. "Fear of flying," as officially certified by responsible head of the Insured's Service in accordance with ap-

plicable regulations.

3. Anxiety neuroses, mental or nervous disorders, dizzy spells, or loss of consciousness that are not accompanied by any organic symptoms or ailments.

4. Alcohol, drugs, venereal disease, arrest or confinement.

5. Disability caused by intentional self-injury, attempted suicide, or criminal assault committed by the Insured, or fighting, except in self-defense.

6. Failure to meet flying proficiency standards as established by the Insured's Service, unless caused by or aggravated by or attributed to physical disqualification, including sickness or accidental bodily injury.

7. Inability of the Insured to meet the physical standards for Hazardous Flight Duty because of a revision in those standards, rather than because of disease or accidental bodily injury causing a change in the physical condition of the Insured.

8. Voluntary removal or suspension from Hazardous Flight Duty

9. Willful violation of flying regulations resulting in suspension from flying, as a punitive measure, or as adjudged by responsible authority of the Insured's Service.

10. Sentence to dismissal from the Service by a general court martial, submitted resignation for the good of the Service, or suspension from flight duty for administrative reasons not due to disease or accidental bodily injury.

11. An accident while riding, flying, or driving in any kind of a race.

12. Primary duty requiring parachute jumping.

13. Due to accidental bodily injury sustained before the effective date of an Insured's coverage under the program.

14. Caused by illness or disease which arose or was contracted before or within 30 days after the effective date of an Insured's coverage under the program, or a recurrence of such disability, whether or not a waiver has been authorized by appropriate medical authority in accordance with regulations or directives of the Service concerned, unless the Insured has been covered for twelve consecutive months immediately prior to the date disability commenced.

FPPP PREMIUM TABLE INSUREDS UNDER AGE 30

AAAA-Endorsed Life Insurance/Flight Pay Protection Plan

If Monthly Flight Pay	Your Annual Flight Pay	Your Annual Prem. Rate	Your Semi-Annual Prem.	Your Quarterly Prem.	Your Gov't Allot. Prem.
$125	$1,500	$45.00	$23.50	$12.25	$4.00
Added	Benefit	$60.00	$31.00	$16.00	$5.25
$156	$1,872	$56.16	$29.08	$15.04	$4.93
Added	Benefit	$74.88	$38.44	$19.72	$6.49
$188	$2,256	$67.68	$34.84	$17.92	$5.89
Added	Benefit	$90.24	$46.12	$23.56	$7.77
$206	$2,472	$74.16	$38.08	$19.54	$6.43
Added	Benefit	$98.88	$50.44	$25.72	$8.49
$400	$4,800	$144.00	$73.00	$37.00	$12.25
Added	Benefit	$192.00	$97.00	$49.00	$16.25

FPPP PREMIUM TABLE FOR AGE 30 AND OVER

AAAA-Endorsed Life Insurance/Flight Pay Protection Plan

$156	$1,872	$74.88	$38.44	$19.72	$6.49
Added	Benefit	$98.28	$50.14	$25.57	$8.44
$188	$2,256	$90.24	$46.12	$23.56	$7.77
Added	Benefit	$118.44	$60.22	$30.61	$10.12
$206	$2,472	$98.88	$50.44	$25.72	$8.49
Added	Benefit	$129.78	$65.89	$33.45	$11.07
$250	$3,000	$120.00	$61.00	$31.00	$10.25
Added	Benefit	$157.50	$79.75	$40.38	$13.38
$280	$3,360	$134.40	$68.20	$34.60	$11.45
Added	Benefit	$176.40	$89.20	$45.10	$14.95
$310	$3,720	$148.80	$75.40	$38.20	$12.65
Added	Benefit	$195.30	$98.65	$49.83	$16.53
$340	$4,080	$163.20	$82.60	$41.80	$13.85
Added	Benefit	$214.20	$108.10	$54.55	$18.10
$370	$4,440	$177.60	$89.80	$45.40	$15.05
Added	Benefit	$233.10	$117.55	$59.28	$19.68
$400	$4,800	$192.00	$97.00	$49.00	$16.25
Added	Benefit	$252.00	$127.00	$64.00	$21.25

APPLICATION FOR FLIGHT PAY PROTECTION PLAN COVERAGE
Ladd Agency, Inc., 1 Crestwood Road, Westport, Conn. 06880

Rank/Grade Name ASN Yrs Svc for Pay

Address

City State ZIP Date of Birth

I have enclosed a check or money order made payable to LADD AGENCY, INC. for the correct premium and understand that coverage under the FPPP is to become effective on the first day of the month after the month in which I make application for the coverage.

I certify that I am currently on flying status in an Active U.S. Army or ARNG USAR unit, am entitled to receive incentive pay, and that to the best of my knowledge I am in good health and that no action is pending to remove me from flying status for failure to meet the required physical standards of the service.

Signature Date

NOTE: This coverage is only made available to AAAA members. I am a current member of the AAAA.
I am not a current member of the AAAA but have enclosed my $15.00 initial year AAAA Dues.

Annual Flight Pay Premium Mode

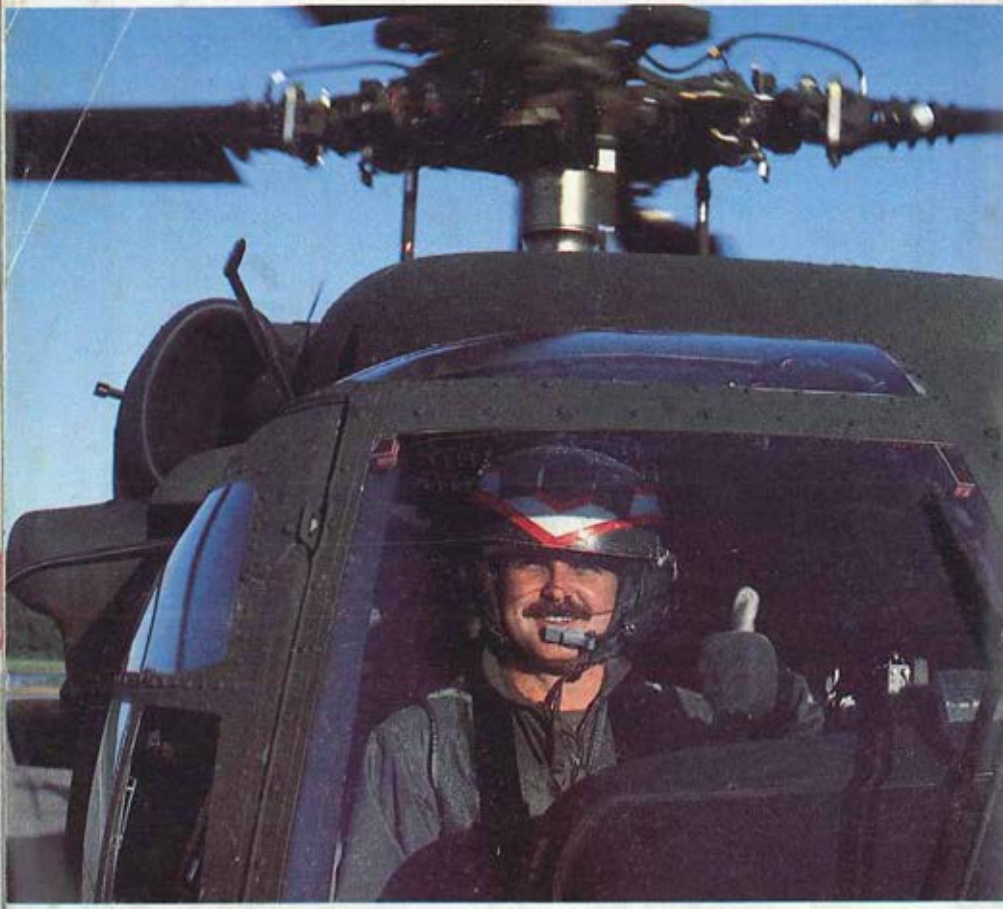
Beneficiary

Relationship to Insured

HERE'S HOW TO TO OBTAIN COVERAGE

1. Complete the application form in its entirety, selecting your premium payment mode. Consult the premium table to determine your appropriate premium.
2. Make your check or money order payable to LADD AGENCY in the amount of the correct premium.
3. Mail your check and this application form to LADD AGENCY, 1 Crestwood Road, Westport, Conn. 06880.
4. Allow 2-3 weeks for the delivery of your individual policy of insurance.
5. Consider that your FPPP coverage begins on the first day of the month after the postmark month in which you make application for the coverage.

The U.S. Army pilot.
The U.S. Army BLACK HAWK.



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