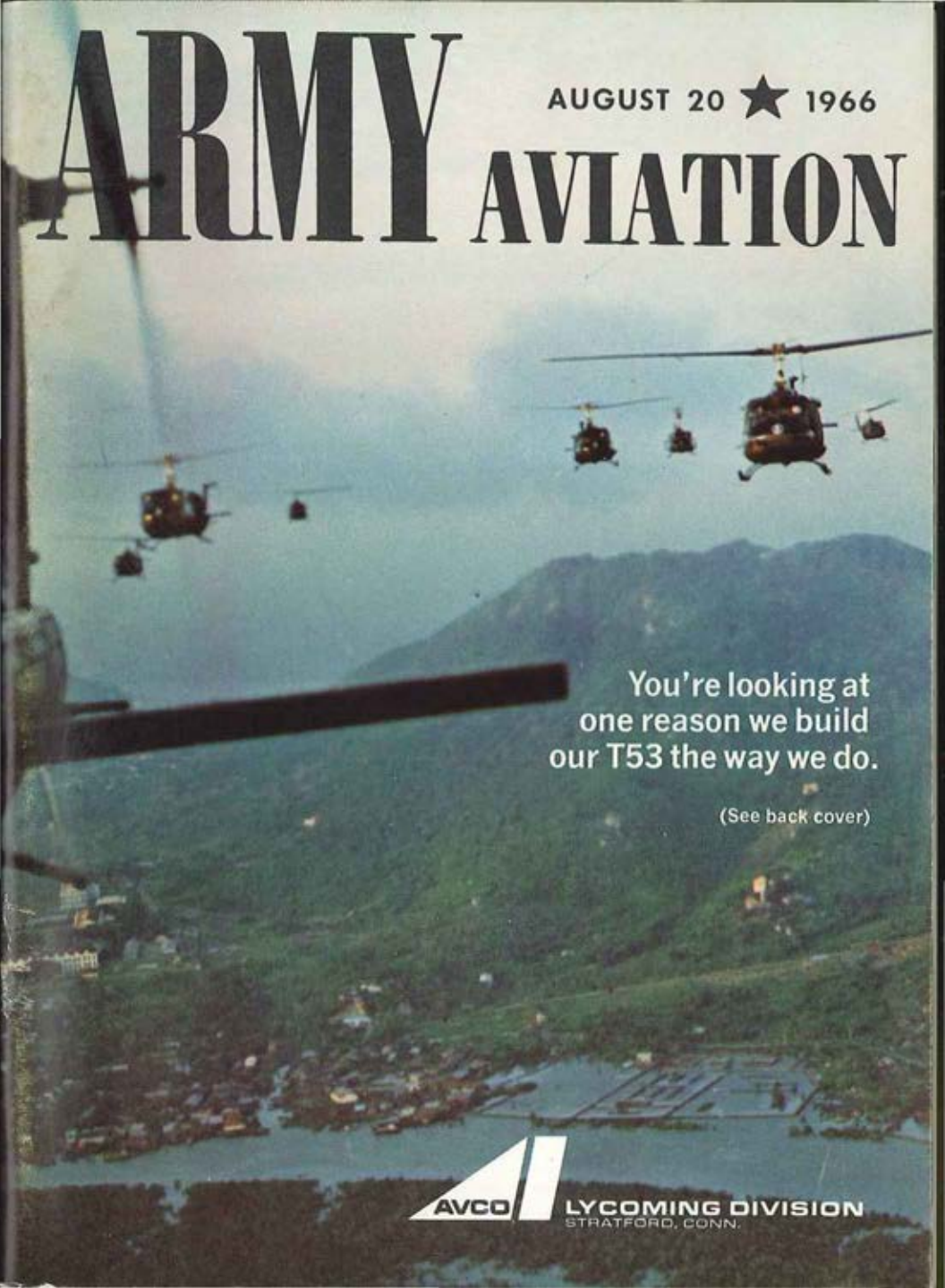
ARMY AVIATION

AUGUST 20 ★ 1966



SUMMARY

August, 1966

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ARMY AVIATION MATERIEL ISSUE

AUGUST 20, 1966

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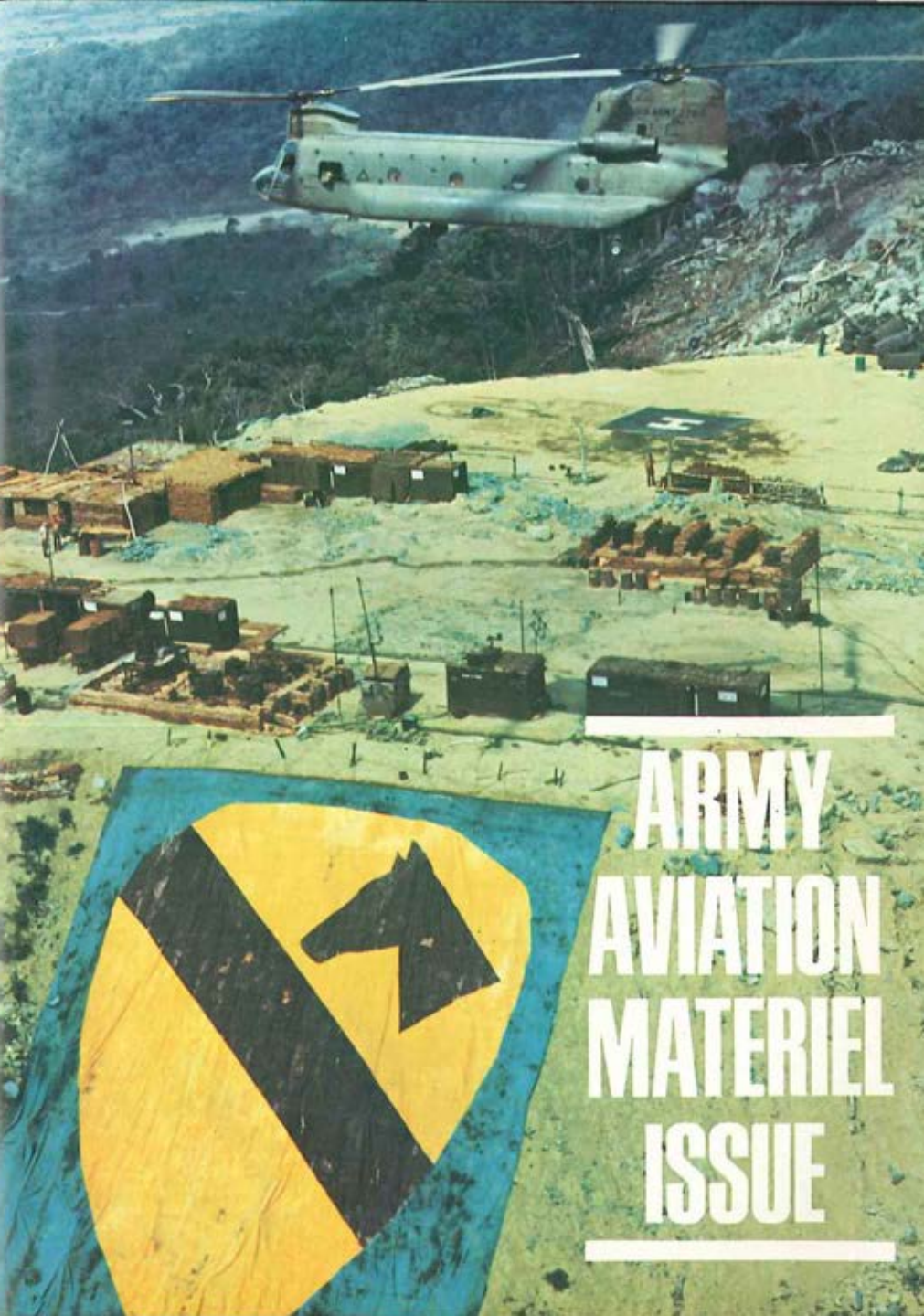

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ARMY AVIATION

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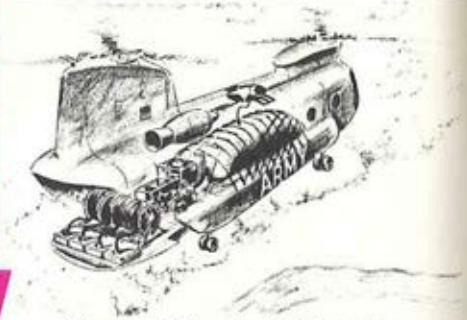

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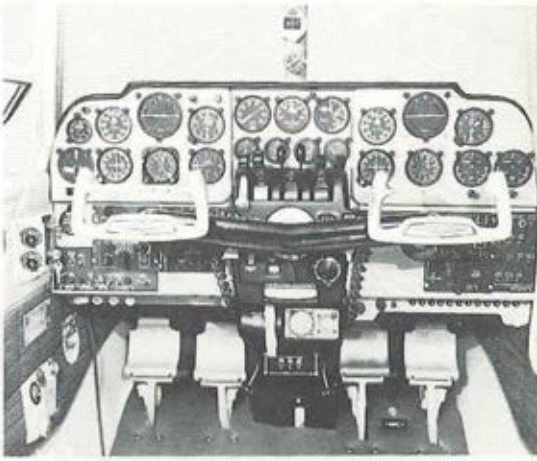

There's plenty of room for equipment *in the T-42A, including dual omni; UHF; ADF; dual RMI; glideslope and marker beacon; transponder and standby VHF transmitter. Complete dual controls, including yoke, brakes and nose steering are standard equipment. Other standard items include all-weather equipment—including deicing and anti-icing—plus oxygen and unfeathering systems.*

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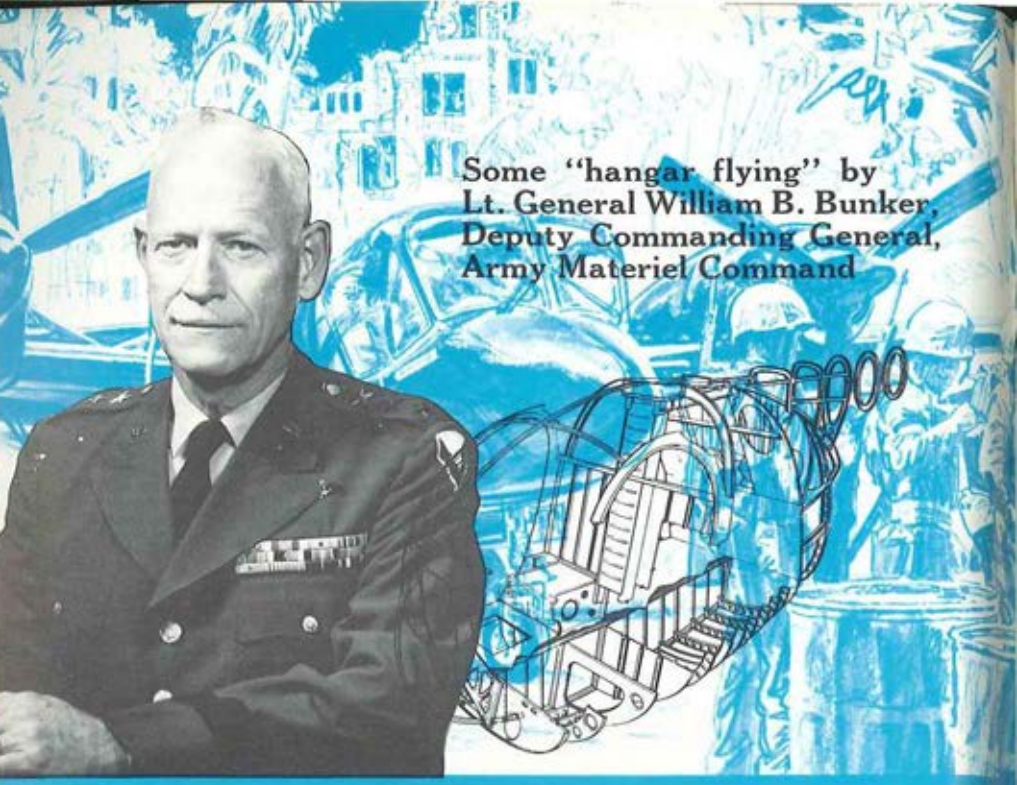


Some "hangar flying" by Lt. General William B. Bunker, Deputy Commanding General, Army Materiel Command

DESIGNING AN ARMY AIRCRAFT

ALL of us in Army aviation have had the experience of being interviewed from time to time by the engineers and designers of our aircraft producers. They discuss mission profiles, hot day requirements, payloads, and other factors in their effort to find the exact aircraft that fits our individual ideas of the job to be done.

Usually, too, at least half the conversation will revolve around the fact that the performance that we are describing so authoritatively differs significantly from that which they have just garnered from some equally (usually better!) qualified source.

Then, too, if your interest, like mine, leads you to stress reliability, maintainability, hot day performance, or such factors, you will be told how impracticable it is to impose such obviously terrestrial considerations on devices which, after all, must still defy the laws of gravity.

I thought that, in view of this syndrome, it might be interesting to take the few lines that Art Kesten has kindly allowed me in this issue to give my purely personal reminiscences on the evolution of the aircraft in today's inventory. I make no claim of historical accuracy or authoritative perspicacity — *let's say it is hangar flying by a non-flyer!*

Traditionally, our development process begins with a rather complete determination of the job to be done which then becomes the basis for the development of a specific weapons system designed to perform the function. While

some of this is apparent in the aircraft research and development program, by far, our greatest progess has been due to the intensive efforts of those in the program to demonstrate some particular idea they desire.

Army aviation's dawn in the Louisiana maneuvers was such a program!

A few dedicated enthusiasts demonstrated to their artillery "users" the superior service their light planes could render in the solution of the forward observer problems. The expansion of the program in World War II was another example of the versatility of the machine and the enthusiastic spirit of the aviators creating the demand for its irreplaceable service as a courier, command post, evacuation ship, and all round handy man.

By the end of the war, these ubiquitous men and their flying machines had made themselves so indispensable to the commanders that they were kept in the Army family when their high performance, long-legged brethren were separated out into the Air Force in the Key West agreements.

A hardware-oriented push

The next big step forward for Army aviation was again, at least by my perspective, a hardware-oriented push by our "true believers." The solution of its infancy problems of mechanics and aerodynamics gave us, in the helicopter, an aircraft ideally suited to the Army's problems and environment.

Like the soldier whom it was designed to serve, it could go anywhere and do anything. It didn't require city-street-like pavements to land on or buildings to be housed in; it didn't require us to try to slide our rugged and bulky equipment into a needle-like, streamlined fuselage, but would carry it dangling like a recruit's pack; it could sneak up a narrow valley and even back out of a hole if the going got rough – it was, in short, a "soldier's airplane."

Perhaps, if we had been the visionaries of Leonardo, we would have described it in a QMR and Igor Sikorsky would have built it. But, since he was there before us, we copped his idea and ran as fast as we could.

MILESTONE FOR VERSATILITY

Artillery pilots Robert M. Leich (l.) and Robert R. Williams (r.) discuss a new mission for the versatile L-4 at Fort Sill, Oklahoma, in the fall of 1942. Courier, CP, wire-layer, med evac — use of the Cub was only limited by the imagination of its pilots.

Even though we didn't invent the helicopter, the enthusiasts who saw its potential were able to convince our far-seeing Chief of Staff into backing a five-fold increase in Army aviation to exploit this new dimension of Army tactics; *the equipment and its proponents created their own requirement.*

The complete package

The next major step was, of course, Ham Howze and his enthusiasts who designed *a complete package* of aircraft and organization and tactics to produce the "airmobile concept." Again, it was a process of exploiting what the aircraft could do by a melding together of units, machines, and doctrine into an Army environment. The success and the acceptance of the concept represented a working together of the industry, aviation, and ground teams to produce a successful *total system.*

During this period, the developments I have recalled were not all a one-way street. We didn't just sit back and wait to cry "*Eureka*" when our friends in industry came up with an airplane that fell neatly into our pattern. We had a long and vigorous campaign with our talented engineers and scientists in industry to convince them that our aircraft would have to live up to the standards of

performance and ruggedness we expected of our soldiers.

Parade ground performance is impressive but success is *more* dependent upon day after day reliable doggedness in the uncomfortable environment of the battlefield. By spinning a globe and doing a little reference work in the *World Almanac*, we demanded performance on an "Army hot day" instead of in a laboratory test all. Looking at our mechanics working in the rain with hand tools, we demanded 1,000-hour TBO's and simple maintenance procedures. Remembering our long, anxious waits for reinforcement and response, we demanded payload and endurance.

In fact, the more we described the Army's environment for our aircraft, the more we raised the cries that we were so "truck-minded" that our airplanes couldn't fly. Nevertheless, the combined push on industry to make our aircraft more "cost/effective" (before the idea had vogue), and on our planners on what air mobility could do, kept the program on its growth curve.

Army aviation exploitation of the special aircraft which suit its requirements has not stopped with our helicopter age. More recently, we have discovered the value of flying cranes as obstacle-crossers and salvage vehicles.

The ability to place close support artillery with the same speed and flexibility that the assault transports place the troops has *tremendously* increased the effectivity of our air mobile operations. The main plea now is to get more of them so that our few hours of availability of our test units don't have to be counted out like miser's coins.

MILESTONE FOR PAYLOAD

Generals Meyer, Bunker, Browning, Howze, Cairns, and Osborne pose with Igor Sikorsky and UAC Board Chairman H. M. Horner on the occasion of the 1,000-hour H-37 accelerated logistical evaluation and test program being completed at Ft. Rucker in Aug., 1957.

MILESTONE FOR ENDURANCE

Maj. Gen. Hamilton H. Howze (center), then Director of Army Aviation, DA, checks the route for the initial trans-Atlantic ferry flight of L-23 (U-8D) aircraft with, l-r, pilots Capts. Weldon C. Britton, John R. Goodrich, Hubert N. Reed, and Dabiel O'Hara.

The weapons helicopter, too, is a further demonstration of the influence of the Army Aviator and the aircraft on the evolution of modern Army tactics. The Tigers at Rucker who strapped guns and wire-guided missiles to the sides of their small helicopters were dedicated "salesmen." They knew they had a good idea that would materially improve the lot of the fellow on the ground. They flew hour after hour over the Georgia hills demonstrating how they could pop up from behind a tree or sweep around the crest of a hill to deliver the shock attack that had been missing from tactics since we cosmolined our sabres a quarter century ago. This vision has led to the evolution of the UH-1B, the *Cobra*, and the *AAFSS* which will be vital elements in the Army's arsenal in any future war.

I remember, at the graduation of the first class of Warrant Officer Helicopter Pilots – a long time ago – General Heileman, the Chief of Transportation, telling these new Army Aviators that they could be proud that they were going to be part of solving the Army's oldest problem.

Since the days of Alexander through the disasters of Hitler's Russian Front, armies have become mired in the inevitable mud of the battlefield.

For the first time, in the helicopter, we had the ability to go where we had to go with the assurance that we could move and shoot, advance or retreat at will. This is being continuously demonstrated in Vietnam today where our airmobile forces can concentrate *anywhere* they wish to exploit their firepower and tactics to defeat the enemy. Today's graduation speakers have little need to refer to the obvious importance of the Army's helicopters on today's battlefield.

The evolution of the Army aircraft which are depicted in this compendium has, by my rationale, been the consequence of the efforts of our aviator champions pushing their claims for utility, our logisticians pressing for their ideas of dependability, and our partners in industry melding together our varied and often conflicting views into an efficient and effective stable of modern horses for the Army team.

Will the future see a change towards a more normal process of QMRs, development programs, and testing? Certainly, the *AAFSS* is following this pattern. We took a good look at the operational problem, the existing hardware, and the state of the art to develop a rather precise statement of requirements and then followed the standardized CDP route, with trade-off analyses, cost/effectiveness evaluations, and life cycle costing.

I think that we will indeed see more of this process in the future, especially in those areas in which we are seeking follow-on generations of aircraft for today's mission.

Exciting developments ahead

On the other hand, I see, too – particularly in the areas of application of the more versatile composite aircraft and other advanced developments – opportunities for the expansion of Army aviation into broader areas of Army problems by way of the champions and proponents of both the Army and industry. I am sure that good ideas are not exhausted and that the materiel edition of *Army Aviation* ten years from now will contain examples of aircraft like the *Cobra* and the *Crane* which represent the vision – and determined championing – of the aviators and engineers of today.

MILESTONE FOR EFFICIENCY

Heart of a new global Army aviation supply net activated in November, 1959, was an AVCOM (then TMC) computer. Through data processing, TMC handled more than 1,000 daily requisitions for parts and equipment carried in its $780,000,000 industry.

Our Research and Development program is well oriented to supply the foundation for aircraft for the future and to ensure the continued growth in performance and effectiveness of our contribution to the Army's missions unlimited.

There are exciting developments, too, on the drawing boards of our imaginative partners in the aviation industry. Army aviation is demonstrating its importance in the Army's total mission every day in Vietnam. I am sure that our hardware efforts will continue to share in this progress.

Today's aircraft are the results of a thousand speeches before the A A A A, AHS, AIAA and other meetings; long sessions of brainpicking between industry and the Army; studies by CDEC, Rucker, and contractors; and the vigorous proponency of the enthusiastic members of our fraternity.

This combination has produced results that are proving themselves under conditions even worse than we described in our QMRs and with results even better than predicted in our war games. I am sure that this "system" will continue to keep Army aviation "*Above the Best.*"

Where is the Army Going in Aviation Procurement and Development

By
Brigadier General
ROBERT R. WILLIAMS
Director of Army Aviation
OACSFOR, DA

THE ideal Army aircraft was described years ago in the following poem traced to the Bell Helicopter Company:

One of Our Simple Problems

"Design a craft," says the Army today.
"It must be built in such a way
That any new pilot can fly hands-off;
Make the hardest landings still feel soft;
Make up for the brains the mechanic lacks
So the boys can repair it with carpet tacks.
It must be fast, yet land on a spot;
Have a bunk for the pilot; for coffee, a pot.
Fast and light and comfortable, too,
With a cruising range to Timbuktu.
Yet this can be no common hack,
But must carry the load of a 10-ton Mack.
It must take off straight up from the
Pentagon Court,
And land straight down inside any fort."
And one last word the Colonels say,
"It's gotta be finished by yesterday."
On second thought, there's one thing more,
"They'll have to sell at the ten-cent store."

The Army has insisted, and rightly so, that its Aviation must be responsive to the needs of the ground unit commander. This means in the simplest terms that Army aircraft must be capable of living and operating in the field.

Simplicity, reliability and maintainability – virtues which we agreed our aircraft must have, were in direct conflict with our desire for an aircraft that could accompany the brigade and battalion into combat. In short, *we wanted helicopter performance with fixed wing economy.*

To add to this dilemma we saw a need for greater speed and endurance for surveillance missions as well as larger pay-

load capabilities for logistical support functions. With such obviously conflicting requirements, it is little wonder that the "Bell" poem was written.

We have, through compromise and pushing the *state of the art*, made great progress in approaching our dream aircraft. The road to progress is never easy and for those who take for granted the magnificent accomplishments of our present day aircraft, I would like to reflect on a little history of how we arrived where we are today.

Long experiences, and a few unsucessful R&D projects, proved that the best VTOL capabilities were inherent in the helicopter. The helicopter, however, could not meet *all* of our expectations. Its limited speed and range, coupled with high maintenance factors, set us searching for a more efficient machine.

The first major effort . . .

The first major effort was in 1951 when a farsighted *General Bunker* was instrumental in starting the *XV-1, 2,* and *3.*

The XV-1 (Page 30) built by McDonnell Aircraft Corporation was a compound helicopter. It flew, and very successfully, in 1955 and is now in the Smithsonian Institute. It unfortunately came out at a time when the Army requirement for speed in the range of 200 knots with VTOL was not evident.

No requirement had been established for escort or fire support helicopters. For transporting people the general Army philosophy was helicopters were just flying trucks and we could not afford to pay much for increased speed. We had not looked very deeply into the questions of vulnerability or productiveness. The *XV-1* contributed to our knowledge on compounds and then became a museum piece.

The *XV-2* (Page 17) was never built. It was to be built by Sikorsky as a single blade helicopter with wings. In high speed flight the rotor was to retract and the aircraft flown as a conventional jet. It was a little ahead of the technology of the time.

The *XV-3* (Page 56) built by Bell Helicopter was a tilt-rotor aircraft. Two

aircraft were built; one was lost in a crash; some technical problems were encountered. However, the project must be declared a success from a technical viewpoint. The one *XV-3* continued to fly in NASA testing until this year. The old bird with the new ideas finally gave up the ghost under some severe strains in the NASA wind tunnel.

During the mid-fifties, it became apparent that there were a number of means of propulsion and lift that had potential in the V/STOL area. For our purposes here, let's accept the V/STOL definition which addresses the capability to accomplish vertical take-offs and landings at a specified weight and short take-offs and landings at higher gross weights.

The test bed series

The first step in analyzing the potential of these new propulsion lift means was to determine their technical feasibility and to identify the technical problems. Toward this end the Army constructed a series of test beds. These aircraft were never intended to be flown operationally but were directed toward the specific purpose of determining the feasibility of the respective systems.

Among these were the Vertol 76 tilt wing, the Doak ducted fan, the Ryan

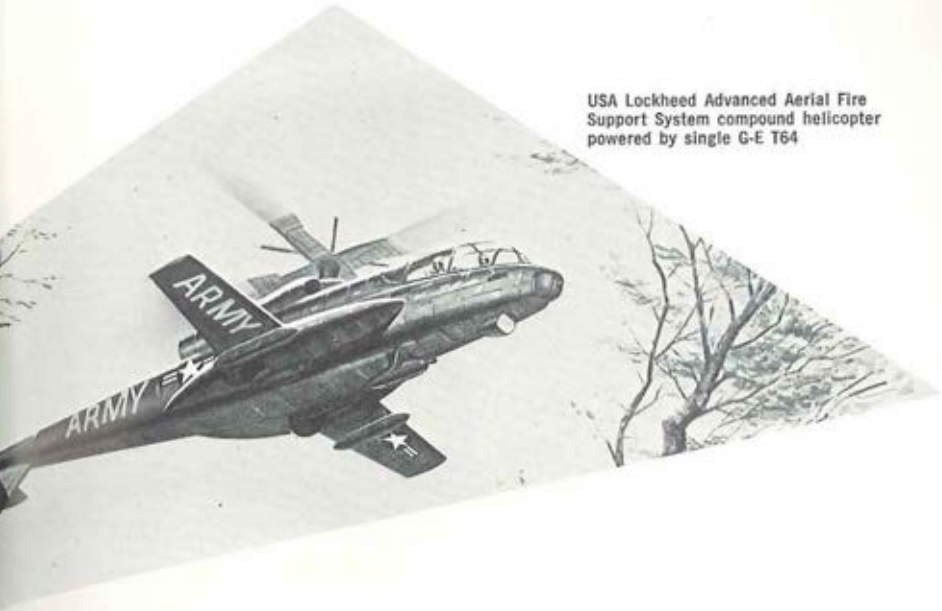
(WHERE/Continued on Page 20)

USAF Bell UH-1F utility helicopter powered by single G-E T58

USN Kaman UH-2 utility helicopter powered by single G-E T58

USMC Sikorsky CH-53A heavy assault helicopter powered by twin G-E T64's

USN Boeing-Vertol UH-46 utility helicopter powered by twin G-E T58's—also in service with USMC as CH-46 medium assault transport



USA Lockheed Advanced Aerial Fire Support System compound helicopter powered by single G-E T64

Helicopters with demanding missions are powered by General Electric

. . . engines ranging from 1000 to 3400 shaft horsepower

FLIGHT PROPULSION DIVISION

GENERAL ELECTRIC

205-17A

LYNN, MASSACHUSETTS/CINCINNATI, OHIO, U.S.A.

Vertiplane, Piasecki *Aerial Jeep*, Avro Car, and many others. (Pages 86-88).

By 1960 it became evident that there could be considerable improvement in the speed and efficiency of the helicopter and there would be a payoff for this speed. We also knew by this time that it was practical, technically speaking, to build aircraft employing many of these new systems.

However, here is where the realization of certain trade-offs became apparent. For example, at one end of the spectrum we found the helicopter embodying the most efficient design and best capability for VTOL but still restricted in speed and range. On the other hand, the fixed wing aircraft was still obviously the most efficient machine for high speed and range.

Nothing comes for free

In between, we now had a series of aircraft – all with higher speed capability than the helicopter and still VTOL – and that could nearly equal the conventional fixed wing aircraft in speed and endurance. But as always has been true in the aviation business, nothing comes for free. With each of these new types of aircraft came certain operational problems.

The most significant of these problems were down-wash impingement, noise, control complexity, and high maintenance requirements. The impact of these problems could not be accurately forecast. If these problems were to be resolved then full scale prototypes must be built and thoroughly evaluated. Toward this goal, the Army participated in several programs, the most significant of these being the *XV-5A*, *P. 1127 (XV-6A)*, and *XC-142*.

The *XV-5A*, (Page 90) or fan-in-wing concept, is the result of Army-sponsored propulsion research by General Electric and aerodynamic research by the NASA. Development of lifting fans driven by J-85 turbojets was initiated in 1959, and in 1961 a competition was conducted for an appropriate flight test airframe. The competition was won by Ryan.

The primary objective of this program is to obtain technical data on the fan-in-wing concept and evaluate its potential application in the surveillance aircraft category. The aircraft underwent flight testing with General Electric as prime contractor and Ryan as subcontractor for the airframe.

The aircraft has been successfully demonstrated in all phases of its flight regime. After completion of contractor flight testing, the aircraft demonstrated vertical take-off, translation and transition to jet mode flight, accelerations to 400 knots, decelerations and conversion to fan mode flight, approach to a hover and a vertical landing. The Program Objectives are to:

- Determine and evaluate flight characteristics of Lift-fan VTOL Propulsion Systems.
- Demonstrate compatability of the propulsion system for both hover and high speed flight.
- Define handling quality requirements for future VTOL aircraft.

Operational experience

The *P. 1127* (Page 94) or *XV-6A* program resulted from the development of a vectored thrust, turbofan engine in the U.K. The engine was designated the British-Siddeley *BS-53 Pegasus* and the Hawker Aircraft *P. 1127* design was selected as an appropriate airframe. The *P. 1127* made its first public V/STOL transition at the Farnsborough Air Show in September 1961.

Since the *P. 1127* offered the earliest promise of V/STOL operational experience, the U.S. entered into an agreement with the U.K. and FRG in June 1962 to continue the development program and conduct Tripartite tests into operational problems with three aircraft each. On the basis of predominant interest, the Army was designated U.S. program manager; however, the Navy and Air Force are full participants in the flight evaluation.

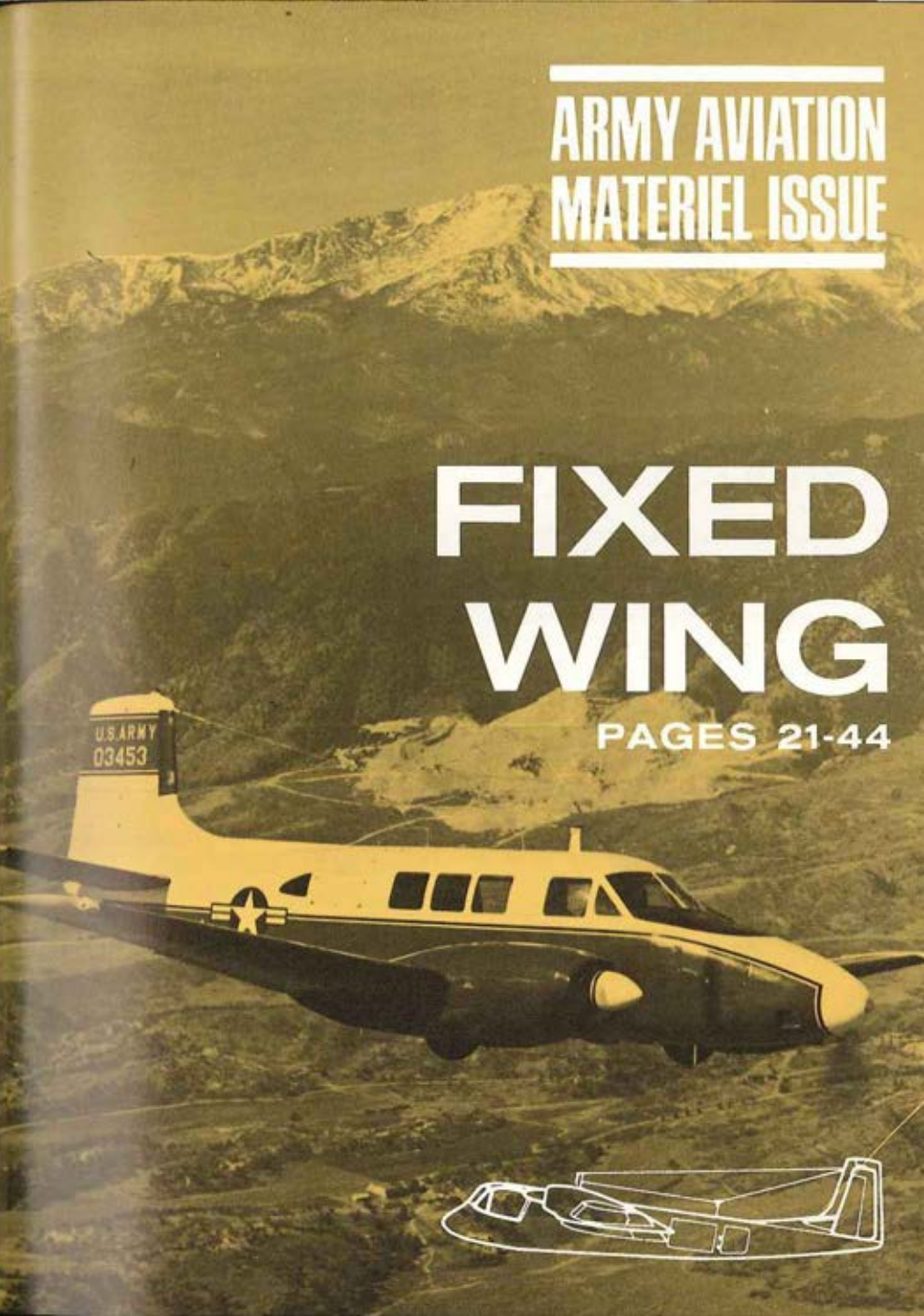
Since completion of the Tripartite program in the U.K., extensive Army testing has been conducted at Fort Campbell, Ky. The Navy has conducted tests at Pa-

(WHERE/Continued on Page 91)

ARMY AVIATION MATERIEL ISSUE

FIXED WING

PAGES 21-44



L-1 VIGILANT

Two-place observation/reconnaissance airplane. Vultee-Stinson.

ENGINES

One Lycoming R-680-9 engine of 295 hp.

PROPELLERS

Hamilton-Standard constant speed propeller, 8 ft. 6 in. diameter.

SPECIFICATIONS

Gross weight: 3,325 lb.

PERFORMANCE

Cruise speed: 114 mph. Service ceiling: 14,000 ft. Max. range: 275 st. mi.

REMARKS

This aircraft was originally designated the O-49. The procurement was handled by the Army Air Corps. All models had flaps and slots. Originally 142 L-1s were purchased off-the-shelf and 182 A models were obtained later. Procurement of all other models was negligible.

L-2

Two-place observation/reconnaissance airplane. Taylorcraft.

ENGINES

One Continental O-170-3 engine of 65 hp.

PROPELLERS

Sensenich two-bladed fixed pitch wooden propeller, 6 ft. diameter.

SPECIFICATIONS

Gross weight: 1,300 lb.

PERFORMANCE

Cruise speed: 96 mph. Service ceiling: 10,050 ft. Max. range: 265 st. mi.

REMARKS

During the period 1941 through 1944, the Army procured 1,942 L-2s. This metal framed, fabric covered aircraft was originally designated the O-57. The L-2 was procured in the A through M models, all models having 65 hp. except the L model, which was 50 hp.

L-3

Two-place observation/reconnaissance airplane. Aeronca.

ENGINES

One Continental O-170-3 engine of 65 hp.

PROPELLERS

The A model had a 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 lb.

PERFORMANCE

Cruise speed: 87 mph. Service ceiling: 7,750 ft. Max. range: 190 st. mi.

REMARKS

The L-3 was a fabric covered, metal frame airplane, originally designated the O-58. A total of ten models were purchased. All were tandem, except the F and G models, which had side by side seating. Largest procurement was in 1942 when 875 were purchased. The following year 490 entered the Army inventory with a total of 1,464 ultimately procured.

L-4 CUB

Two-place observation/liaison aircraft. Piper Aircraft Corp., Lock Haven, Pa.

ENGINES

One Continental O-170-3 piston engine of 65 hp.

PROPELLERS

Two-bladed Sensenich fixed-pitch wooden propeller.

SPECIFICATIONS

Span: 35 ft. 4 in. Length: 22 ft. 4 in. Height: 6 ft. 7 in. Empty weight: 658 lb. Gross weight: 1,220 lb.

PERFORMANCE

Max. speed (SL): 87 mph. Cruise speed (SL): 75 mph. Service ceiling: 9,300 ft. Max. range: 190 st. mi.

REMARKS

From the initial procurement in 1942 until 1945, 9,404 L-4s were delivered to the Army. Ten models were purchased. All were tandem except the E and F models. While the L-2, L-3, and L-4 were all officially referred to as "Grasshoppers", the civilian name "Cub" stayed with the L-4.

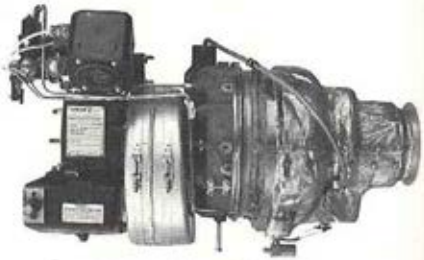
They know she'll crank up in seconds

without ground support of any kind!

Success of the airmobile concept in Viet Nam is due largely to the ability of helicopters to land and take off in remote areas without ground support.

In the Boeing-Vertol CH-47A *Chinook,* CH/UH-46A *Sea Knight,* and the Sikorsky CH-3C, CH-53A, and CH-54A *Flying Crane,* the rugged, compact Solar *Titan*® gas turbine engine is used as the auxiliary power unit. The *Titan* turbine APU provides power to start main engines and operate all hydraulic and electrical systems independent of ground support equipment.

For further information on Solar gas turbines, write: Solar, Department 0-279. San Diego, California 92112.



Titan APU—weight 70 lbs, over-all length 26 inches

SOLAR

A DIVISION OF INTERNATIONAL HARVESTER COMPANY

L-5 SENTINEL

Two-place observation/reconnaissance airplane. Vultee-Stinson.

ENGINES

One Lycoming O-435-1 engine of 185 hp.

PROPELLERS

Sensenich fixed pitch two-bladed wooden propeller, 7 ft. 1 in. Diameter.

SPECIFICATIONS

Gross weight: 2,020 lb.

PERFORMANCE

Cruise speed: 100 mph. Service ceilinp: 15,800 ft. Max. range: 420 st. mi.

REMARKS

The L-5 had a metal frame fuselage, wood and metal airfoil structure, and was fabric covered. Originally used only by the Army Air Corps, it was designated the O-62. Army Liaison pilots operated these aircraft from 1945 and during the first months of the Korean hostilities. The "drop" rear seat permitted cargo or litter carrying capabilities. A total of 3,975 L-5s were delivered between 1942 and 1945.

L-6

Two-place observation/reconnaissance airplane. Interstate.

ENGINES

One Aircooled O-200-5 engine of 102 hp.

PROPELLERS

Two-bladed U.S. Propeller made fixed pitch propeller, 6 ft. 4 in. diameter.

SPECIFICATIONS

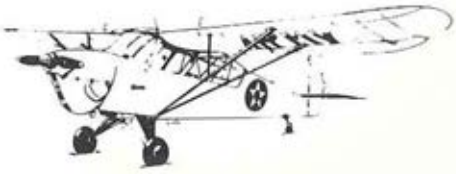
Gross weight: 1,650 lb.

PERFORMANCE

Cruise speed: 87 mph. Service ceiling: 12,100 ft. Max. range: 692 st. mi.

REMARKS

This fabric covered aircraft was known commercially as the S-1B Cadet. Its original Army Air Corps military designation was the O-63.



L-13

Three-place Observation / reconnaissance airplane. Consolidated Vultee.

ENGINES

One Aircooled XO-425-5 engine of 245 hp.

PROPELLERS

Two-bladed variable pitch propeller, 8 ft. 6 in. diameter.

SPECIFICATIONS

Gross weight: 2,900 lb.

PERFORMANCE

Cruise speed (SL): 106 mph. Service ceiling: 15,000 ft. Max. range: 488 st. mi.

REMARKS

Although the Army Ground Forces tested two of these aircraft in 1945, the L-13 was not accepted at that time. Later, the AGF did procure the L-13 and by June, 1951, there were 43 of this model in the Army inventory. The L-13 could carry two litters in place of the rear passenger seats. Production prototypes had folding wings, but these models were not procured by the Army.

L-14

Three-place observation airplane with med-evac capability. Piper Aircraft Corp., Lock Haven, Pa.

ENGINES

One Lycoming O-290-3 piston engine of 130 hp.

PROPELLERS

Two-bladed Sensenich model 76 JB 44 propeller.

SPECIFICATIONS

Span: 35 ft. 10 in. Length: 23 ft. 3 in. Height: 7 ft. Empty weight: 1,100 lb. Gross weight: 1,800 lb.

PERFORMANCE

Max. speed (SL): 117 mph. Cruise speed (SL): 104 mph. Service ceiling: 14,500 ft. Max. range: 345 st. mi. Endurance: 3.5 hours.

REMARKS

The Army Ground Forces procured five L-14s and cancelled an order for 845 more on VJ Day. The airplane had long landing gear and a litter carrying configuration.

L-15 SCOUT

Two-place observation airplane. Boeing.

ENGINES

One Lycoming 0-290-7 engine of 125 hp.

PROPELLERS

Two-bladed variable pitch propeller.

SPECIFICATIONS

Gross weight: 2,216 lb.

PERFORMANCE

Cruise speed (SL): 86 mph. Service ceiling: 12,500 ft. Max. range: 217 st. mi.

REMARKS

This was a production prototype that was never produced in quantity. Twelve YL-15s were procured by the Army between 1947 and 1949. The aircraft used spoilers instead of ailerons and full flaps. The Observer was seated backwards.

L-16

Two-place observation/reconnaissance airplane. Aeronca.

ENGINES

One Continental 0-190-1 engine of 95 hp.

PROPELLERS

Two-bladed McCauley fixed pitch metal propeller, 6 ft. 1 in. diameter.

SPECIFICATIONS

Gross weight: 1,300 lb.

PERFORMANCE

Cruise speed (SL): 81 mph. Service ceiling: 14,500 ft. Max. range: 252 st. mi.

REMARKS

This metal frame, fabric covered aircraft was the military version of the Aeronca "Champion". The L-16 was the most inexpensive aircraft ever purchased by the military. The initial date of Army procurement was in 1948, with a total of 609 eventually being delivered. The L-16 was used extensively in the early part of the Korean conflict.

L-17 NAVION

Four-place utility/liaison airplane. Ryan (North American).

ENGINES

One Continental 0-470-7 engine of 205 hp.

PROPELLERS

Two-bladed Hartzell variable pitch metal or plastic propellers, 7 ft. diameter.

SPECIFICATIONS

Gross weight: 3,050 lb.

PERFORMANCE

Cruise speed (SL): 121 mph. Service ceiling: 10,900 ft. Max. range: 592 st. mi.

REMARKS

Three models of the L-17 were procured by the Army. The "A" models (185 hp.) were first purchased in 1947 with the inventory high point of 42 being reached in 1951. The "B" and "C" models (205 hp.) were purchased in FY 1949 with 196 "B"s and 35 "C"s being inventory highs in 1949. The Navions were turned over to Army flying clubs when they were phased out of service.

L-21

Two-place observation/liaison aircraft. Piper Aircraft Corp., Lock Haven, Pa.

ENGINES

One Lycoming O-290-D piston engine of 125 hp.

PROPELLERS

Two-bladed Sensenich fixed pitch metal propeller.

SPECIFICATIONS

Span: 35 ft. 4 in. Length: 22 ft. 3 in. Height: 6 ft. 8 in. Empty weight: 935 lb. Gross weight: 1,500 lb.

PERFORMANCE

Max. speed (SL): 120 mph. Cruise speed (SL): 110 mph. Service ceiling: 16,000 ft. Max. range: 300 st. mi. Rate of climb: 1,000 fpm.

REMARKS

Since 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. The L-18C, purchased for MDAP, was the same as the L-21 except that it had a 90 hp. Continental engine.

L-25

One-place experimental aircraft. McDonnell Aircraft Corp., St. Louis, Missouri.

ENGINES

One Continental R-975-19 engine.

ROTOR SYSTEM

Single three-bladed rotor and two-bladed pusher propeller.

SPECIFICATIONS

Empty weight: 4,277 lb. Gross weight: 5,505 lb.

PERFORMANCE

Max. speed (SL): 195 mph. Service ceiling: 11,800 ft. Max. range: 368 st. mi.

REMARKS

The Army procured two L-25 aircraft from McDonnell for state-of-the-art research. This was the only aircraft given three separate designations. It was also called the XV-1 and the XH-35.

LC-126

Four-place utility aircraft. Cessna Aircraft Company, Wichita, Kansas.

ENGINES

One Jacobs R-755-11 direct drive engine of 300 hp.

PROPELLERS

Hamilton Standard constant-speed metal, 7 ft. 9 in. diameter.

SPECIFICATIONS

Span: 36 ft. 2 in. Length: 27 ft. 4 in. Height: 8 ft. 3.5 in. Empty weight: 2,250 lb. Gross weight: 3,350 lb.

PERFORMANCE

Max. speed (SL): 180 mph. Cruise speed (SL): 135 mph. Cruise speed, 10,000': 165 mph. Service ceiling: 19,800 ft. Max. range: 900 st. mi. Endurance: 4 hours. Rate of climb: 1,200 fpm.

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.

T-37

Two-place jet trainer. Cessna Aircraft Company, Wichita, Kansas.

ENGINES

Two Continental J-69-T-9 turbo jets developing 1,840 lbs. thrust.

SPECIFICATIONS

Span: 33 ft. 10 in. Length: 29 ft. 4 in. Height: 9 ft. 5 in. Gross weight: 6,600 lb.

PERFORMANCE

Max. speed: 408 mph at military power 21,730 rpm, 35,000 ft. Cruise speed: 368 mph at normal power 20,700 rpm at 35,000 ft. Service ceiling: 39,200 ft. Max. range: 796 st. mi. Endurance: 2.8 hrs. Rate of climb: 3,200 fpm.

REMARKS

This aircraft is procured by the U.S. Air Force as a primary jet trainer. Three T-37s were loaned to the Army in 1958 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.

G-91

One-place tactical/reconnaissance jet fighter. Fiat Aviation Div., Turin, Italy.

ENGINES

Two GE J85-13 engines of 4,078 lb/ thrust each, with after-burner.

SPECIFICATIONS

Span: 29 ft. Length: 39 ft. 3 in. Height: 14 ft. 5 in. Empty weight: 8,380 lb. Gross weight: 19,070 lb.

PERFORMANCE

Max. speed (SL): 715 mph. Operational ceiling: 27,600 ft.

REMARKS

In 1961, the U.S. 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.

T-37

CV-2 Caribou

Tactical transport STOL aircraft. De Havilland Aircraft of Canada, Ltd., Downsview, Ontario.

ENGINES

Two Pratt & Whitney R2000-7M2 engines of 1,450 hp each.

PROPELLERS

Hamilton Standard three-bladed metal variable pitch.

SPECIFICATIONS

Span: 95 ft. 8 in. Length: 72 ft. 7 in. Height: 31 ft. 9 in. Empty weight: 16,920 lb. Gross weight: 28,500 lb. Places: Crew of two and 32 passengers or 14 litters plus 8 troops.

PERFORMANCE

Max. speed (SL): 216 mph. Cruise speed (SL): 170 mph. Cruise speed, 7,500' at 50% power: 182 mph. Service ceiling: 27,500 ft. Max. range: 1,400 st. mi. Rate of climb: 1,575 fpm.

REMARKS

Since initial procurement in November 1959, the Army brought 173 Caribou into its inventory. According to the joint Army-Air Force agreement of April 1966, the Army released all CV-2 Caribou aircraft to the U.S. Air Force.

CV-7 Buffalo

Tactical transport STOL aircraft. De Havilland Aircraft of Canada, Ltd., Downsview, Ontario.

ENGINES

Two GE T64-10 turbo-prop engines of 2,850 shp each.

PROPELLERS

Hamilton Standard three-bladed metal reversible pitch, 165 in. diameter.

SPECIFICATIONS

Span: 96 ft. Length: 77 ft. 3 in. Height: 28 ft. 7 in. Empty weight: 22,864 lb. Gross weight: 41,000 lb. Places: Crew of two and 41 passengers or 35 Paratroopers or 24 litters and six troops.

PERFORMANCE

Max. speed (SL): 267 mph. Cruise speed (SL): 253 mph. Cruise speed, 5,000': 277 mph. Service ceiling: 31,000 ft. Max. range: 529 st. mi. Rate of climb: 2,050 fpm.

REMARKS

The Buffalo is a larger turbo-prop version of the CV-2 Caribou. Since April 1965, four prototypes have been built under a U.S.-Canadian production-sharing agreement.

O-1 BIRD DOG

Two-place liaison, observation aircraft. Cessna Aircraft Company, Wichita, Kansas.

ENGINES

One Continental O-470-11 piston engine rated at 213 hp.

PROPELLERS

McCauley fixed-pitch two-bladed metal propeller.

SPECIFICATIONS

Span: 36 ft. Length: 25 ft. 10 in. Height: 7 ft. 4 in. Empty weight: 1,614 lb. Gross weight: 2,430 lb.

PERFORMANCE

Max. speed (SL): 115 mph. Cruise speed (SL): 100 mph. Cruise speed, 10,000': 106 mph. Service ceiling: 1,850 ft. Max. range: 592 st. mi. Endurance: 4.67 hours. Rate of climb: 1,040 fpm.

REMARKS

The TO-1D is the instrument trainer version of this aircraft and is structually stronger. It has a variable-pitch propeller and an instrument panel in the rear, which may be enclosed for hooded flight. The O-1E encorporates the redesigned structural changes of the TO-1D. The O-1F is a modified TO-1D with its rear instrument panel, VOR, and UHF radios removed, and bomb shackles and a VHF radio installed.

OV-1 MOHAWK

Two-place observation/surveillance airplane. Grumman Aircraft Engineering Corp., Bethpage, L.I., New York.

ENGINES

Two Lycoming T53-L-7,8 turbines of 1,100 shp each.

PROPELLERS

Hamilton Standard three-bladed reversing and feathering, 10 ft. diameter.

SPECIFICATIONS

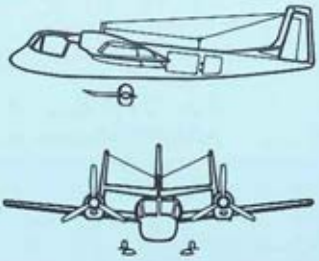
Span: 42 ft. Length: 41 ft. Height: 12 ft. 8 in. Gross weight: 12,675 lb.

PERFORMANCE

Max. speed (SL): 325 mph. Cruise speed (SL): 207 mph. Service ceiling: 33,000 ft. Max. range: 774 st. mi.

REMARKS

Three basic configurations of the Mohawk have been produced—the "A" for visual and photographic; the "B" for visual, photographic, and side-looking radar (SLAR); and the "C" for visual, photographic, and infrared. The electronic equipment varies with each model, resulting in changes in gross weight, performance, and cost. First Mohawk deliveries were made to the Army in 1960.



U-1A OTTER

Eleven-place utility STOL aircraft. De Havilland Aircraft of Canada, Ltd., Downsview, Ontario.

ENGINES

One Pratt and Whitney R-1340-59 piston engine developing 600 hp.

PROPELLERS

Hamilton Standard three-bladed metal variable pitch.

SPECIFICATIONS

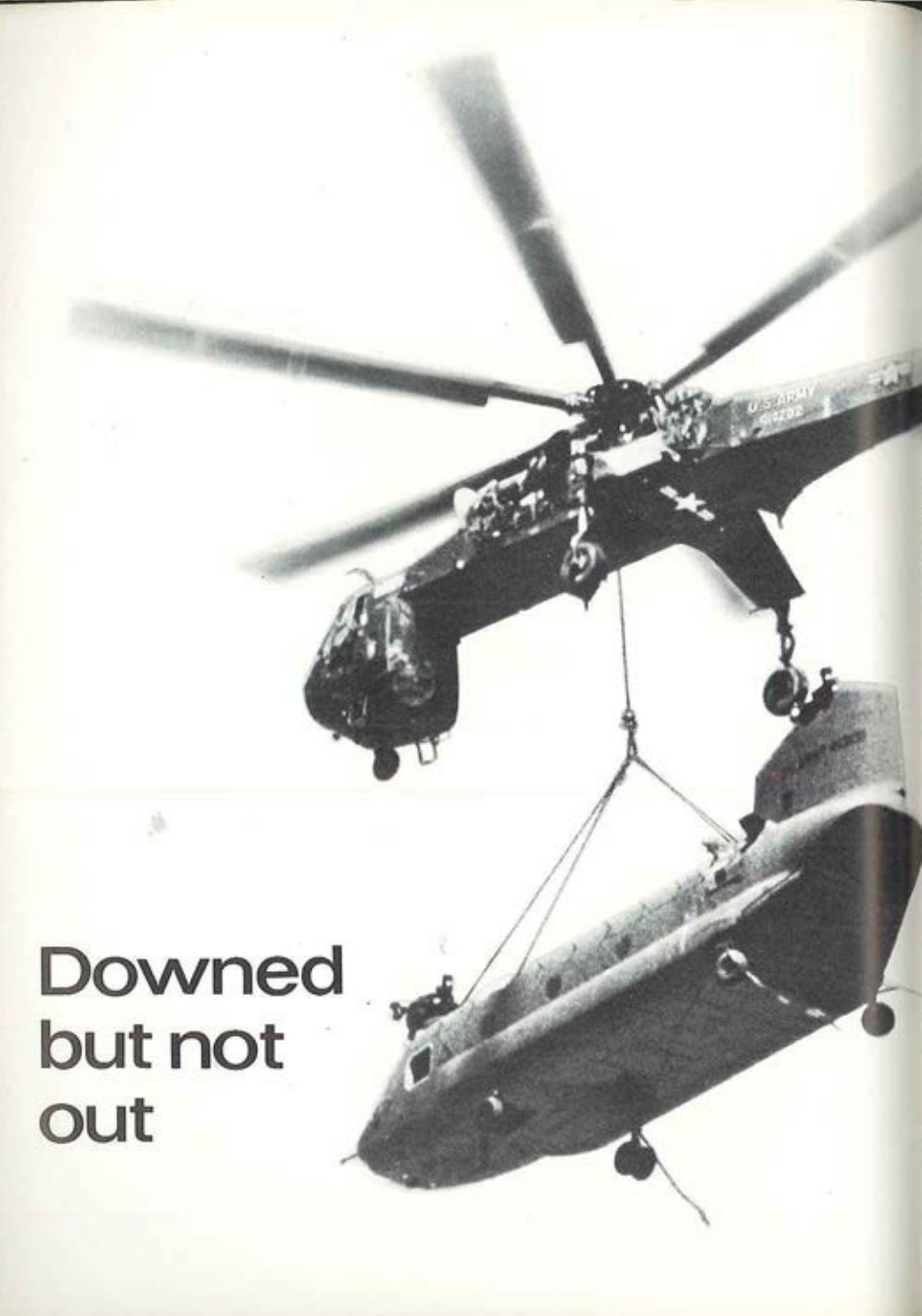
Span: 58 ft. Length: 41 ft. 10 in. Height: 12 ft. 7 in. Empty weight: 4,431 lb. Gross weight: 8,000 lb.

PERFORMANCE

Max. speed (SL): 153 mph. Cruise speed (SL): 120 mph. Cruise speed, 5,000': 138 mph. Service ceiling: 17,400 ft. Max. range: 580 st. mi. Rate of climb: 735 fpm.

REMARKS

Since the initial procurement in March 1955, the Army has purchased 205 Otters. The U-1A is one of the few service aircraft to retain its original designation.



Downed but not out

Aircraft already recovered by Sikorsky Skycranes in Vietnam are worth four times the Skycranes' cost.

Just since October, four Sikorsky-built Army CH-54A Skycranes have retrieved over *100* downed aircraft in Vietnam — both helicopters and fixed-wing, ranging in weight from 2,000 to 18,000 pounds.

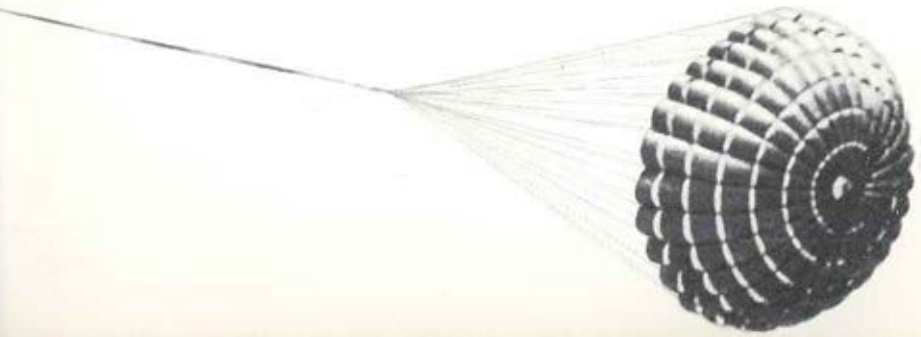
Total value of these recovered aircraft is estimated at approximately $40 million, or more than *four times* the cost of the four Skycranes. Almost all have been repaired and are back in service.

What else are Skycranes doing in Vietnam?

Airlifting bulldozers, roadgraders, trucks and 17,000-pound signal vans. Deploying 155mm artillery pieces, along with men and equipment. Delivering clusters of up to five 500-gallon fuel bags, rations, and ammunition to attacking ground forces. Airlifting supplies from offshore vessels directly to distribution centers. Carrying specially-equipped vans serving as hospitals, command posts, and communications centers.

Clearly, the Sikorsky Skycrane — developed in advance of the need — is proving its military value . . . *and* its cost effectiveness.

Sikorsky Aircraft DIVISION OF UNITED AIRCRAFT CORPORATION
STRATFORD, CONNECTICUT



U-6 BEAVER

Six-place utility aircraft. De Havilland Aircraft of Canada, Ltd. Downsview, Ontario.

ENGINES

One Pratt & Whitney R-985 AN-1, -3, -39, -39A engines of 450 hp.

PROPELLERS

Hamilton Standard two-bladed metal variable pitch.

SPECIFICATIONS

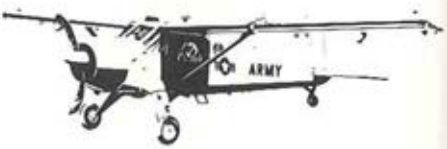
Span: 48 ft. Length: 30 ft. 4 in. Height: 10 ft. 5 in. Empty weight: 3,000 lb. Gross weight: 5,100 lb.

PERFORMANCE

Max. speed (SL): 156 mph. Cruise speed (SL): 125 mph. Cruise speed, 5,000': 130 mph. Service ceiling: 20,000 ft. Max. range: 690 st. mi. Endurance: 8 hours. Rate of climb: 850 fpm.

REMARKS

A rugged all-purpose aircraft originally used as a civilian "bush plane", the Beaver perfoms a wide variety of Army missions. Since initial procurement in 1951, the Army has purchased 654 U-6 aircraft. L-20 was the former designation of the Beaver.



U-8D SEMINOLE

Six-place, command/liaison utility transport. Beech Aircraft Corp., Wichita, Kansas.

ENGINES

Two Lycoming GSO-480-1 engines rated at 340 hp each.

PROPELLERS

Hartzell, 3-bladed, constant speed.

SPECIFICATIONS

Span: 45 ft. 3-3/8 in. Length: 31 ft. 6-15/32 in. Height: 11 ft. 6½ in. Empty weight: 4,978 lbs. Gross weight: 7,300 lbs.

PERFORMANCE

Max. speed (SL): 212 mph. Cruise speed (SL): 179 mph (65% power). Cruise speed, 5,000 ft. (65% power): 187 mph. 10,000 ft. (65% power): 195 mph. Service ceiling: 25,500 ft. Max. range: 1,320 st. mi. Endurance: 8.2 hrs. Rate of climb: 1,585 fpm.

REMARKS

The U-8D Seminole is the military version of the Beechcraft Model 50 Twin-Bonanza. Under contract in 1960, a number of U-8Ds were modified to the RL-23D (RL-8D) configuration incorporating the APQ86 SLAR installation. A total of 206 Seminoles have been purchased from 1952 through FY 65.

U-8F SEMINOLE

Seven-place utility command/liaison aircraft. Beech Aircraft Corp., Wichita, Kansas.

ENGINES

Two Lycoming IGSO-480-A1A6 engines. 340 hp each.

PROPELLERS

Hartzell, 3-bladed, metal, diameter 93 inches.

SPECIFICATIONS

Span: 45 ft. 10 in. Length: 33 ft. 4 in. Height: 14 ft. 2 in. Empty weight: 4,987 lb. Gross weight: 7,700 lbs.

PERFORMANCE

Max. speed (SL): 212 mph. Cruise speed (SL): 181 mph. Cruise speed, 5000 ft. (65% power): 187 mph. 10,000 ft. (65% power): 196 mph. Service ceiling: 27,100 feet. Max. range: 1,272 st. mi. Endurance: 8.38 hrs. Rate of climb: 1,304 fpm.

REMARKS

The U-8F is the military counterpart of the Beechcraft Queen Air 65 executive transport. A total of 71 U-8Fs have been procured through FY 65 since the initial purchase date in 1959.

U-9 AERO COMMANDER

Five-place utility, command/liaison aircraft. Aero Commander, Bethany, Okla.

ENGINES

Two Lycoming GO-480-1 piston engines of 550 hp.

PROPELLERS

Hartzell 3-bladed variable-pitch, metal propellers.

SPECIFICATIONS

Span: 49 ft. 6 in. Length: 35 ft. 2 in. Height: 14 ft. 6 in. Empty weight: 4,475 lb. Gross weight: 7,500 lb.

PERFORMANCE

Max. speed (SL): 255 mph. Cruise speed (SL): 198 mph. Cruise speed, 10,000': 226 mph. Service ceiling: 22,900 ft. Max. range: 1,150 st. mi. Rate of climb: 1,525 fpm.

REMARKS

The first U-9 (YL-26) was obtained by the Army in 1953. Since then, three later models, the B, C, and D, have been procured in addition to a conversion of the D model to carry special electronic gear. Nine Aero Commanders (all models) were in the Army inventory as of Jan., 1965 of twenty purchased.

U-10 HELIO COURIER

Six-place STOL utility aircraft. Helio Aircraft Corp., Bedford, Mass.

ENGINES

One Lycoming GO-480-G1D6 developing 295 hp.

PROPELLERS

Hartzell three-bladed constant-speed, 96 in. diameter.

SPECIFICATIONS

Span: 39 ft. Length: 31 ft. Height: 8 ft. 10 in. Empty weight: 2,037 lb. Gross weight: 3,600 lb.

PERFORMANCE

Max. speed (SL): 170 mph. Cruise speed (SL): 150 mph. Cruise speed, 10,000': 164 mph. Service ceiling: 16,500 ft. Max. range: 1,100 st. miles. Endurance: 14 hours. Rate of climb: 1,125 fpm.

REMARKS

Originally designated the L-24, the Helio Courier was an "off-the-shelf" purchase in 1963 for operational testing and evaluation. Twenty U-10s have been procured through FY 1965. Purchased for use by U.S. Army Special Forces Groups.

T-42A

Four-place instrument/transition trainer. Beech Aircraft Corp., Wichita, Kan.

ENGINES

Two Continental IO-470-L engines, rated at 260 hp each.

PROPELLERS

McCauley 2-blade, metal, 78 in. diameter.

SPECIFICATIONS

Span: 31 ft. 8 in. Length: 26 ft. 7 in. Height: 9 ft. 6 in. Empty weight: 3,197 lb. Gross weight: 5,100 lb.

PERFORMANCE

Max. speed (SL): 235 mph. Cruise speed (SL): 200 mph. Cruise speed, 5,000 ft. (65% power): 210 mph. 10,000 ft. (65% power): 218 mph. Service ceiling: 19,700 ft. Max. range: 1,065 nm (with 45 min. reserve). Endurance: 7.5 hrs. Climb rate: 1,670 fpm.

REMARKS

In Feb. 1965, 55 T-42As were ordered for delivery between Aug. 65 and June 66. The T-42A is used primarily as a fixed-wing, twin-engine instrument trainer by the Army Aviation School Instrument Training Division at Fort Rucker, Alabama. The secondary mission of the airplane is the twin-engine transition of single-engine rated Army Aviators and is capable of fulfilling other military roles. The T-42A is the military counterpart of the Beechcraft B55 Baron.

OV-10A

Light armed reconnaissance aircraft. North American Aviation, Columbus Div., Columbus, Ohio.

ENGINES

Two AiResearch T76-G-6/8 turboprops of 660 shp each.

PROPELLERS

Hamilton Standard three-bladed, counter-rotating, metal, 8 ft. 6 in. diameter.

SPECIFICATIONS

Span: 30 ft. 3 in. Length: 40 ft. 11 in. Height: 15 ft. 1 in. Empty weight: 5,257 lb. Gross weight: 10,000 lb. Places: One to six, depending on configuration.

PERFORMANCE

Max. speed (SL): 305 mph. Cruise speed (SL): 218 mph. Cruise speed, 10,000': 234 mph. Service ceiling: 19,000 ft. Max. range: 1,035 st. mi. Endurance: 2.75 hours. Rate of climb: 2,100 fpm.

REMARKS

The Dept. of Defense selected North American Aviation's Columbus Div. in 1965 to design, build, and flight test seven proto-types of the OV-10A.

NU-8F

Seven-place command/liaison utility transport aircraft. Beech Aircraft Corp., Wichita, Kansas.

ENGINES

Two Pratt & Whitney PT6A-6 turbine engines rated at 550 shp each.

PROPELLERS

Hartzell, 3-blade, constant speed.

SPECIFICATIONS

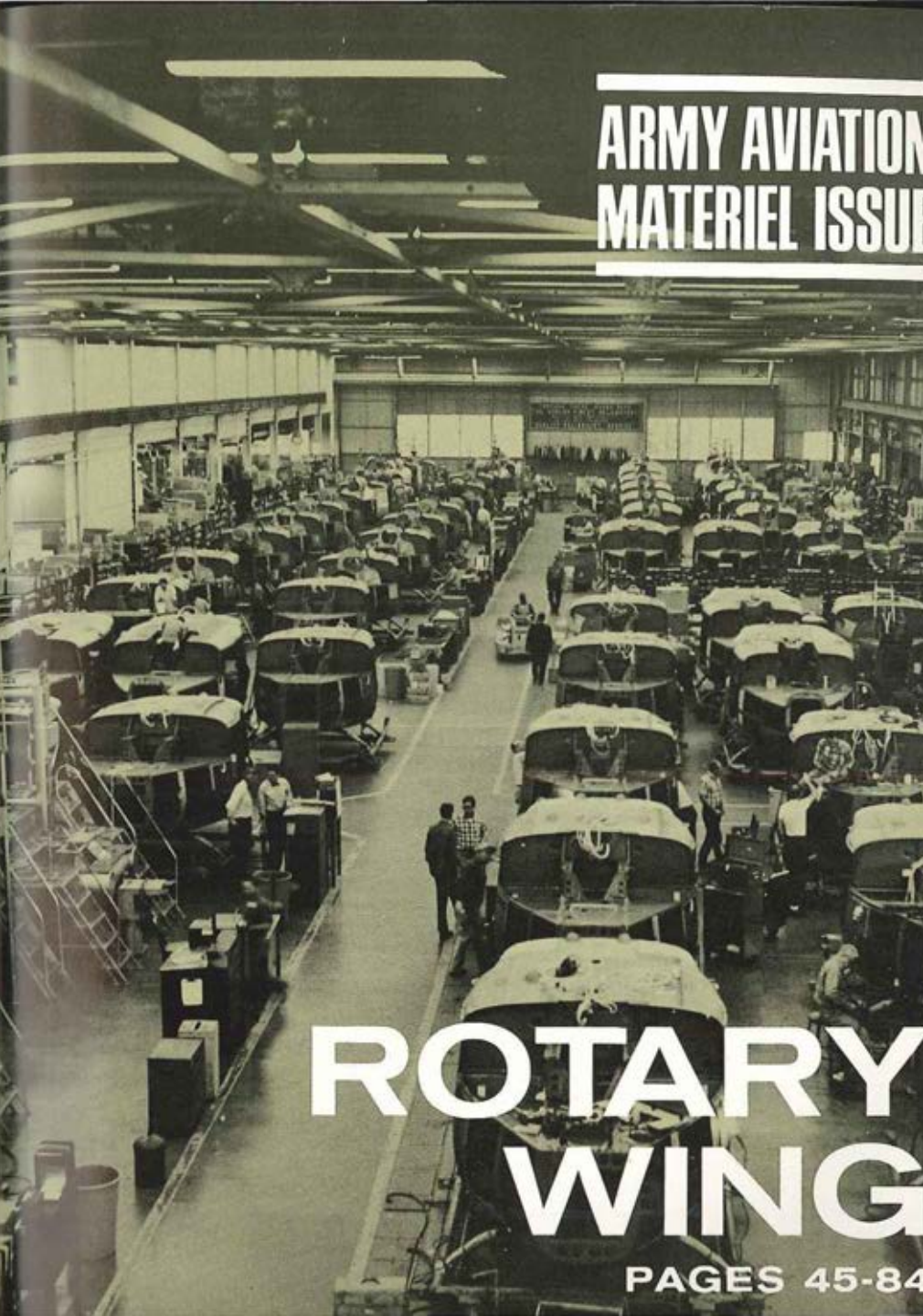
Span: 45 ft. 10½ in. Length: 35 ft. 4¼ in. Height: 14 ft. 8 in. Empty weight: 5,081 lbs. Gross weight: 9,300 lbs.

PERFORMANCE

Max. speed (SL): 239 mph. Cruise (SL): 239 mph. Cruise speed, 10,000 ft.: 260 mph. Service ceiling: 27,400 ft. Max. range, 16,000 ft.: 1,470 st. mi. Endurance: 6.8 hrs. Rate of climb: 1,900 fpm.

REMARKS

The NU-8F is a turbine powered, unpressurized U-8F. The increased speed, useful load, and range make it an excellent addition to the Army fleet. One NU-8F was procured by the Army in 1964.



ARMY AVIATION MATERIEL ISSU

ROTARY WING

PAGES 45-84

OH-13 SIOUX

Two-place observation helicopter. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One Lycoming C-435-23 piston engine of 250 hp.

ROTOR SYSTEM

Single two-bladed semi-rigid main rotor. Two-bladed metal tail rotor.

SPECIFICATIONS

Rotor diameter: 37 ft. Length: 31 ft. 7 in. Height: 9 ft. 4 in. Empty weight: 1,800 lb. Gross weight: 2,950 lb.

PERFORMANCE

Max. speed (SL): 81 mph. Cruise speed (SL): 81 mph. Cruise speed, 5,000': 88 mph. Service ceiling: 13,400 ft. Max. range: 191 st. mi.

REMARKS

The Army procured its first YR-13 in December 1946. Models procured include A, B, C, D, E, G, H, and K. See index for other OH-13 models. Since 1946, the Army has procured a total of 2,197 OH-13s of all models.

XH-15

Two-place experimental observation helicopter. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One Continental XO-470-5 turbo supercharged engine of 280 hp.

ROTOR SYSTEM

Single two-bladed rotor system, wooden blades.

SPECIFICATIONS

Rotor diameter: 36 ft. 10 in. Length: 43 ft. Gross weight: 2,700 lb.

PERFORMANCE

Max. speed (SL): 100 mph Service ceiling: 20,000 ft. No other mission data available. Only experimental work completed.

REMARKS

Because the XH-15 never became a production article, many of the parameters were never firmly established. The XH-15 was designed as a high altitude helicopter for the U.S. Air Force and was probably the first helicopter to incorporate a turbo supercharged engine.

H-16B

Research cargo helicopter. Piasecki Aircraft Corp., Philadelphia, Pa.

ENGINES

Two Allison T56-A-5 turbine engines of 2,100 shp each.

ROTOR SYSTEM

Tandem four-bladed metal fully articulated rotor system.

SPECIFICATIONS

Rotor diameter: 82 ft. Gross weight: 46,700 lb. Places: crew of three and 47 troops.

PERFORMANCE

Cruise speed (SL): 143 mph. Service ceiling: 15,600 ft. Max. range: 200 st. mi.

REMARKS

The Army procured two YH-16s for test and evaluation purposes. The second H-16 was an "A" model employing the Allison T38 turbine engine. The test project was terminated in 1956.

H-17

Heavy lift aircraft test vehicle. Hughes Tool Company, Aircraft Div., Culver City, California.

ENGINES

One TG-180 (J-36) modified gas turbine engine of 3,480 hp.

ROTOR SYSTEM

Single two-bladed metal main rotor, 130 ft. diameter and 68 in. chord.

SPECIFICATIONS

Rotor diameter: 130 ft. Gross weight: 46,000 lb. Three-place.

PERFORMANCE

Test aircraft, no performance data available.

REMARKS

This was the initial effort to produce a flying crane or heavy lift aircraft. The H-17 was a test vehicle procured by the U.S. Air Force in 1953. Evaluation data was supplied to the Army. This project was launched by the Kellett Company and later taken over by Hughes.

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YH-18A

Four-place utility helicopter. Sikorsky Aircraft Div., Stratford, Connecticut.

ENGINES

One Franklin 0-425-1 piston engine of 245 hp.

ROTOR SYSTEM

Single three-bladed metal main rotor and two-bladed metal 5 ft. 5 in. dia. anti-torque rotor.

SPECIFICATIONS

Rotor diameter: 33 ft. Length: 35 ft. 6 in. Height: 8 ft. 8 in. Gross weight: 2,700 lb.

PERFORMANCE

Max. speed (SL): 110 mph. Cruise speed (SL): 92 mph. Service ceiling: 13,800 ft. Hover ceiling (OGE): 1,100 ft. Max. range: 305 st. mi. Endurance: 3.5 hours. Rate of climb: 1,050 fpm.

REMARKS

Four YH-18As were procured by the Army in 1950 for operational and engineering tests and evaluation.

UH-19

Twelve-place utility helicopter. Sikorsky Aircraft Division, Stratford, Conn.

ENGINES

One Curtiss-Wright (Lycoming) R-1300-3 piston engine of 700 hp.

ROTOR SYSTEM

Single three-bladed main rotor and a two-bladed metal 8' dia. anti-torque rotor.

SPECIFICATIONS

Rotor diameter: 53 feet. Fuselage length: 41 ft. 2 in. Height: 15 ft. 6 in. Empty weight 5,250 lb. Gross weight: 7,500 lb.

PERFORMANCE

Max. speed (SL): 112 mph. Cruise speed (SL): 91 mph. Service ceiling: 10,600 ft. Hover ceiling (OGE): 2,300 ft. Max. range: 360 st. mi. Endurance: 4.3 hours. Rate of climb: 1,020 fpm.

REMARKS

The UH-19 was the world's first transport helicopter and the first to be used for commercial scheduled passenger service. Since initial procurement in Nov. 1949, 355 Chickasaws have been brought into the Army inventory through FY 65.

H-24

Two-place observation helicopter. Seibl Helicopter.

ENGINES

One Lycoming 0-290-D1 engine of 130 hp.

ROTOR SYSTEM

Single two-bladed main rotor, wooden blades.

SPECIFICATIONS

Rotor diameter: 29 ft. Gross weight: 1,540 lb.

PERFORMANCE

Cruise speed (SL): 58 mph. Service ceiling: 4,300 ft. Max. range: 98 st. mi.

REMARKS

Two H-24s were procured in 1951 for operational and engineering evaluation. The aircraft was also considered for aeromedical evacuation purposes.

H-25

Eight-place utility helicopter. Piasecki Aircraft Corp., Philadelphia, Pa.

ENGINES

One Continental R-975-42 engine of 475 hp.

ROTOR SYSTEM

Tandem three-bladed rotor system.

SPECIFICATIONS

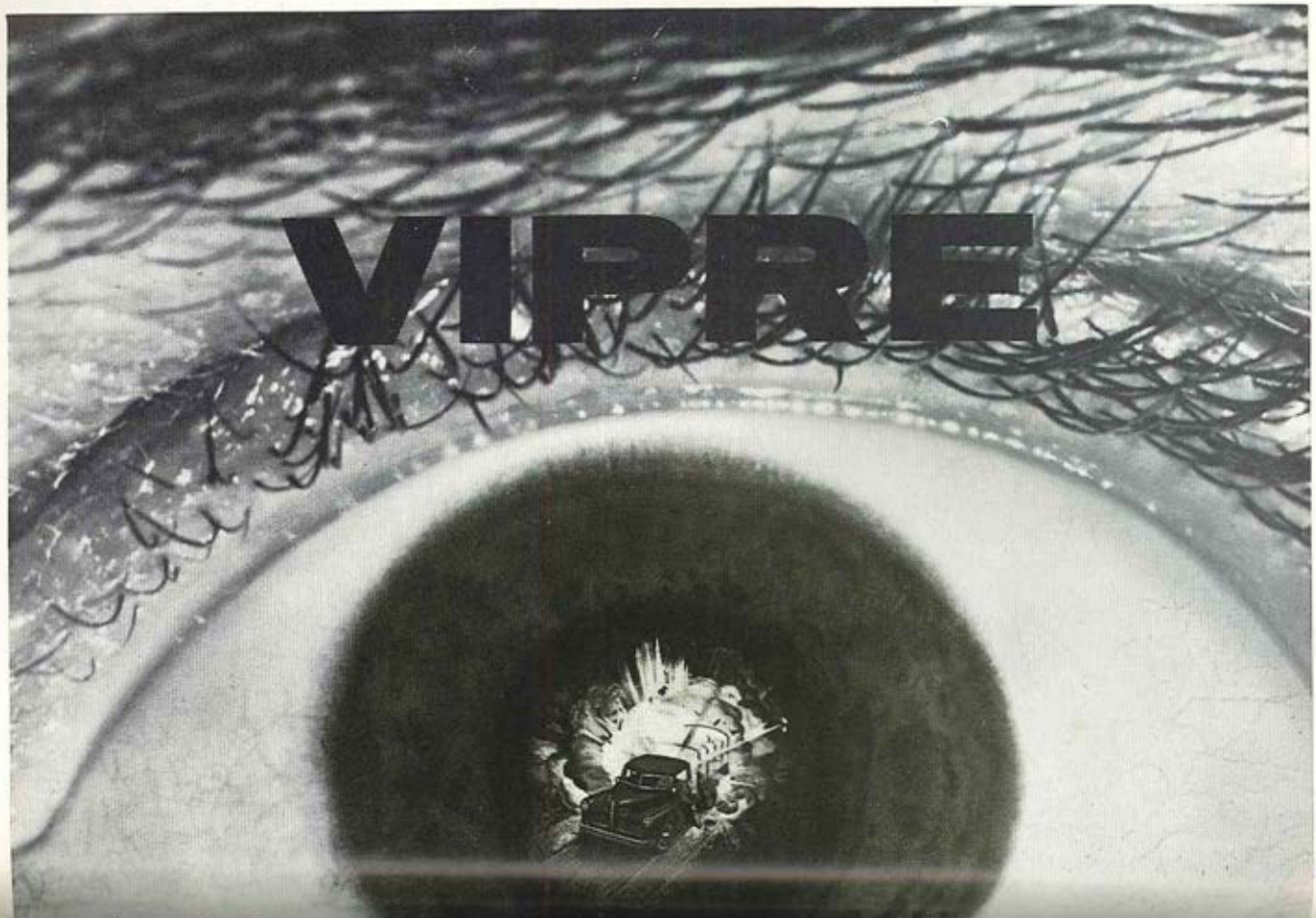
Rotor diameter: 35 ft. Gross weight: 5,500 lb.

PERFORMANCE

Cruise speed (SL): 92 mph. Service ceiling: 12,700 ft. Max. range: 357 st. mi.

REMARKS

The H-25 was developed for the Navy for rescue operations. With minor modifications, it met Army operational needs in cargo and utility missions. Fifty H-25s were procured by the Army, but were later turned over to the Navy for use.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H-26

One-place observation research helicopter. American Helicopter.

ENGINES

Two XPJ49-AH-3 tip-mounted pulse jet engines, 36 lb/thrust.

ROTOR SYSTEM

Single two-bladed teetering rotor system, blades by Prewitt.

SPECIFICATIONS

Gross weight: 810 lb.

PERFORMANCE

Cruise speed (SL): 75 mph. Service ceiling: 7,000 ft. Max. range: 100 st. mi.

REMARKS

The Army procured five YH-26s during the period 1952-1954 for engineering and operational evaluation.

H-30

Two-place observation helicopter. McCulloch Motors.

ENGINES

One Franklin 6A4-200-C6 engine of 200 hp.

ROTOR SYSTEM

Tandem three-bladed rotor system.

SPECIFICATIONS

Rotor diameter: 22 ft. Gross weight: 2,000 lb.

PERFORMANCE

Cruise speed (SL): 90 mph. Service ceiling: 12,000 ft. Max. range: 198 st. mi.

REMARKS

Two H-30s were procured by the Army in 1952 for operational and engineering evaluation.

H-31

Eight-place utility helicopter. Doman Helicopters Inc., Danbury, Connecticut.

ENGINES

One Lycoming SO-580-D engine of 400 hp.

ROTOR SYSTEM

Single four-bladed main rotor system, wooden blades. Three-bladed tail rotor, wooden blades.

SPECIFICATIONS

Gross weight: 5,200 lb.

PERFORMANCE

Cruise speed (SL): 78 mph. Service ceiling: 5,700 ft. Max. range: 450 st. mi.

REMARKS

The Army procured two H-31s in 1952 for tests and evaluation. The aircraft had a completely sealed, rigid, non-articulated rotor system. The commercial designation was the LZ-5.

H-32 HORNET

Two-place observation helicopter. Hiller Aircraft Company, Palo Alto, Calif.

ENGINES

Two Hiller HR J2B Ram Jet engines of 30 lb/thrust each.

ROTOR SYSTEM

Single two-bladed metal main rotor and single two-bladed wooden tail rotor, 32 in. diameter,

SPECIFICATIONS

Rotor diameter: 23 ft. Gross weight: 1,080 lb.

PERFORMANCE

Cruise speed (SL): 70 mph. Service ceiling: 11,500 ft. Max. range: 28 st. mi.

REMARKS

The Hornet first flew in 1950, although the Army did not take delivery of the aircraft until 1956, when six were received.

H-33 (XV-3)

Two-place tilting-rotor research aircraft. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One R-985 engine.

ROTOR SYSTEM

Two two-bladed semi-rigid tilting rotors.

SPECIFICATIONS

Rotor diameter: 23 ft. Length: 30 ft. 4 in. Height: 13 ft. 7 in. Empty weight: 4,200 lb. Gross weight: 4,850 lb.

PERFORMANCE

Max. speed (SL): 150 mph. Cruise speed (SL): 130 mph. Service ceiling: 12,000 ft. Max. range: 140 st. mi.

REMARKS

The Army procured two prototypes of the H-33 in 1958. The Convertiplane achieved 100 per cent in-flight conversion of its tilting rotors in Dec. 1958, the world's first such performance by this type aircraft. Over 100 full conversions were made during tests conducted. The Convertiplane was also designated the XV-3.

H-39

Four-place utility helicopter. Sikorsky Aircraft Division, Stratford, Connecticut.

ENGINES

One Turbomeca Artouse II-XT-51-T3 turbine.

ROTOR SYSTEM

Single four-bladed articulated main rotor and metal three-bladed 6', 4" dia. anti-torque rotor.

SPECIFICATIONS

Rotor diameter: 35 ft. Length: 41 ft. 9 in. Height: 9 ft. 7 in. Empty weight: 2,105 lb. Gross weight: 3,361 lb.

PERFORMANCE

Max. speed (SL): 150 mph. Cruise speed (SL): 138 mph. Service ceiling: 17,900 ft. Hover ceiling (OGE): 15,100 ft. Max. range: 265 st. mi. Endurance: 2 hours. Rate of climb: 1,680 fpm.

REMARKS

The H-39 was basically a modified H-18 with an Artouse II gas turbine engine installed. In 1954 the Army obtained one of these helicopters to be used for operational and engineering evaluation. The H-39 set World Records in 1954 for its class for Speed: 156.1 mph and Altitude: 24,220 feet.

From an original painting for Chandler Evans by Keith Ferris

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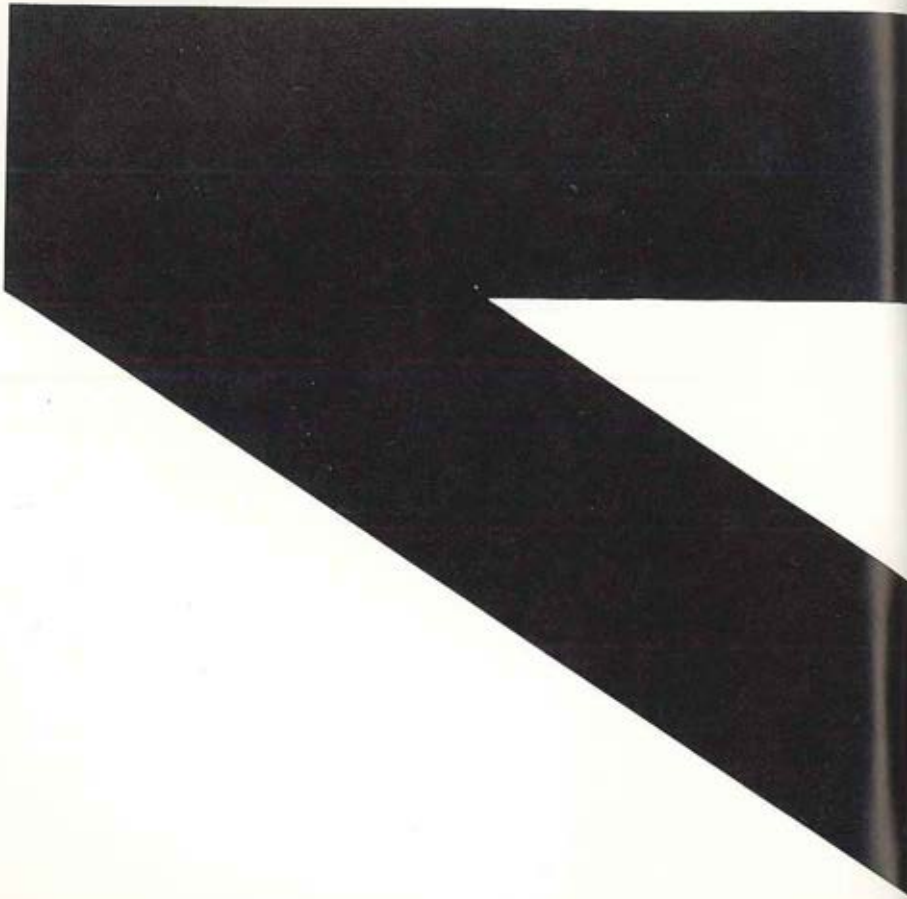

ARMY MOHAWK SETS

The United States Army and Grumman claimed four world aviation records in 1966 with the OV-1 Mohawk, reconnaissance and surveillance intelligence aircraft.

The Mohawk accomplished these records for turboprop aircraft weighing between 13,227 lbs. and 17,636 lbs.:

- Time to climb to 3,000 meters (9,842 ft.) 3 minutes and 46 seconds
- Time to climb to 6,000 meters (19,685 ft.) 9 minutes and 9 seconds
- Sustained altitude in horizontal flight, 32,000 ft. (Pilot: James Peters, Grumman)
- 100 KM closed-circuit course at 5,000 feet in 12 minutes 44.8 seconds, for average speed of 292 miles per hour (Pilot: Col. Edward Nielsen, U.S. Army)

NEW RECORDS

Other records are being set by the Army's Mohawks in day-in, night-out operations in SLAR, IR, photo and eyeball reconnaissance in Vietnam. Working as a team, the OV-1B SLAR and OV-1C Infrared Mohawks see what's ahead for the Army's assault groups in Vietnam. These aircraft play a vital part in identifying enemy installations and movements. Field commanders need this type of air-to-ground reporting to establish tactical superiority.

Pilots Colonel Edward L. Nielsen, USA, and James Peters, Grumman. In center NAA observer Ron Ellico.

GRUMMAN AIRCRAFT ENGINEERING CORP.
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H-41 SENECA

Four-place observation helicopter. Cessna Aircraft Company, Wichita, Kansas.

ENGINES

One Continental FSO-526 horizontally mounted piston engine of 260 hp.

ROTOR SYSTEM

Single two-bladed metal main rotor. Two-bladed metal 7 ft. diameter tail rotor.

SPECIFICATIONS

Rotor diameter: 35 ft. Length: 42 ft. 5 in. Height: 8 ft. 5 in. Empty weight: 2,080 lb. Gross weight: 3,000 lb.

PERFORMANCE

Max. speed (SL): 122 mph. Cruise speed (SL): 95 mph. Cruise speed, 10,000': 120 mph. Service ceiling: 12,200 ft. Hover ceiling (OGE): 6,500 ft. Max. range: 310 st. mi. Endurance: 3.37 hours. Rate of climb: 1,030 fpm.

REMARKS

The Army procured ten H-41 helicopters in 1957 for high altitude operation tests and evaluation. No others were purchased.

YHC-1

28-place medium transport helicopter. Boeing Vertol Div., Morton, Pa.

ENGINES

Two T58-GE-6 turbines of 1,050 shp each.

ROTOR SYSTEM

Tandem three-bladed rotors.

SPECIFICATIONS

Rotor diameter: 48 ft. 4 in. Length: 44 ft. 7 in. Height: 16 ft. 10 in. Empty weight: 11,716 lb. Gross weight: 18,700 lb. Overload gross wt.: 21,400 lb.

PERFORMANCE

Max. speed (SL): 168 mph. Cruise speed (SL): 155 mph. Service ceiling: 13,700 ft. Hover ceiling, OGE: 6,500 ft. Max. range: 115 st. mi Rate of climb: 1,700 fpm.

REMARKS

The Army procured three YHC-1s in 1959 for tests and evaluation. Engineering and operational data obtained from this aircraft led to the development of the CH-46, the Boeing 107, and the CH-47 Chinook.

AH-56A HUEYCOBRA

Two-place armed helicopter. Bell Helicopter Company, Forth Worth, Texas.

ENGINES

One Lycoming T53-L-13 gas turbine of 1,400 shp.

ROTOR SYSTEM

Single two-bladed Model 540 "door hinge" main rotor, 27 in. chord. Two-bladed tail rotor, 8 ft. 6 in. diameter.

SPECIFICATIONS

Rotor diameter: 44 ft. Length: 44 ft. 5 in. Height: 12 ft. Empty weight: 5,280 lb. Gross weight: 9,500 lb.

PERFORMANCE

To be determined after flight tests.

REMARKS

The HueyCobra was designed independently by Bell and procured by the Army to fill the gap in armed helicopters until production of the AAFSS reaches the field. The three basic weapons of the AH-56A are the XM-134 minigun, M-5 grenade launcher, and the 2.75 inch folding fin aerial rocket. Armored crew seats and Teflon hub bearings are features of the Huey-Cobra.

CH-21 SHAWNEE

Cargo helicopter. Boeing Vertol Div., Morton, Pa.

ENGINES

One Curtiss-Wright R-1820-103 developing 1,425 hp.

ROTOR SYSTEM

Tandem 3-bladed rotors.

SPECIFICATIONS

Rotor diameter: 44 ft. Length: 52 ft. 7 in. Height: 15 ft. 9 in. Empty weight: 8,950 lb. Gross weight: 15,200 lb. Places: Crew of three and 20 troops or 12 litters.

PERFORMANCE

Max. speed (SL): 127 mph. Cruise speed (SL): 98 mph. Service ceiling: 18,600 ft. Max. range: 245 st. mi. Endurance: 2 hrs. 41 min.

REMARKS

Since the initial date of procurement in June 1950, the Army purchased 334 CH-21s of all models. The Shawnee was, until late 1963, the workhorse of Vietnam, when it was phased out, being replaced by the ubiquitous Huey.

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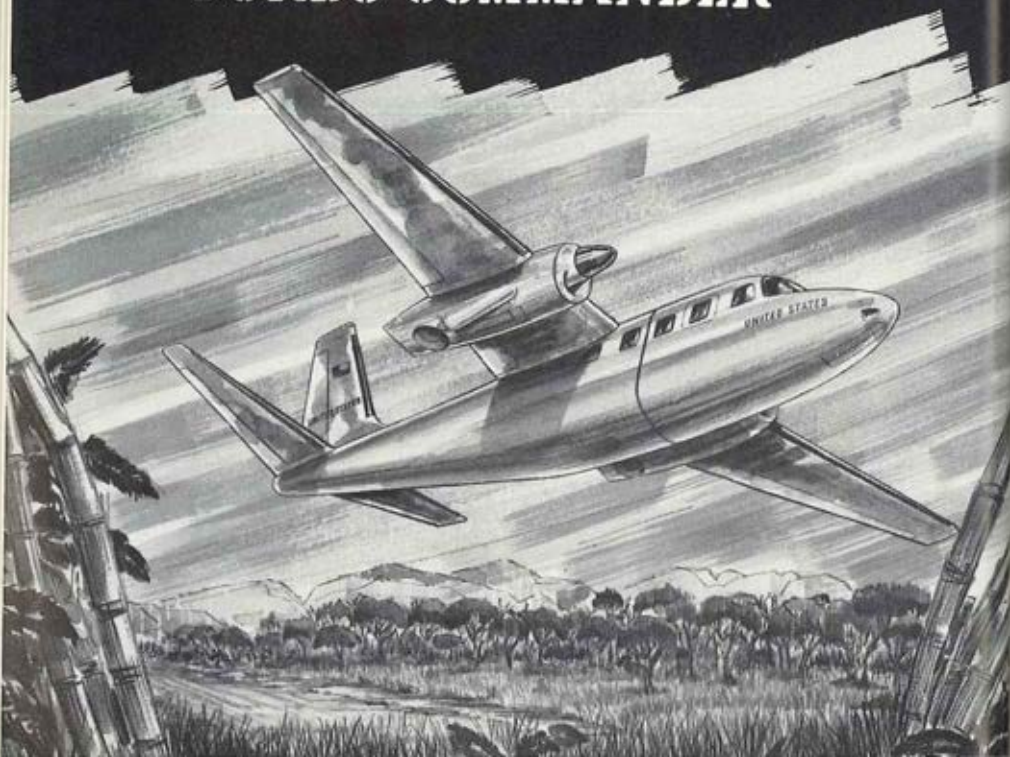

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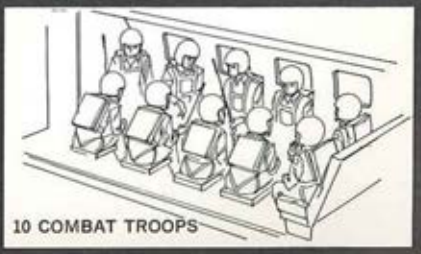
10 COMBAT TROOPS

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Four advantages, without cost penalty, are inherent in Continental's T67-T-1 Twin Turbine powerplant for helicopters: (1) Elimination of the height-velocity "danger zone". (2) Over-all increased mission effectiveness. (3) Improved night flying and all-weather capability. (4) The built-in ability to fly home on a single engine.

The T67 has a horsepower rating of 1540 and has demonstrated a specific fuel consumption of 0.56 pounds per horsepower hour.

The T67 automatic control provides multi-engine benefits without additional pilot duties. This unique powerplant with automatic power sharing has completed service evaluation flight tests in a Bell Huey with these outstanding results . . . single engine flight up to 17,000 feet altitude and at temperatures up to 100°F.

The T67 is another first for Continental, and a major aviation development. It costs no more per horsepower than any available single engine in its power range.

CONTINENTAL AVIATION AND ENGINEERING CORP.

12700 KERCHEVAL AVENUE • DETROIT, MICHIGAN 48215

CH-34 CHOCTAW

16-place cargo and light tactical transport helicopter. Sikorsky Aircraft Division, Stratford, Conn.

ENGINES

One Curtiss-Wright R-1820-84 piston engine of 1,425 hp.

ROTOR SYSTEM

Single four-bladed main rotor, and four-bladed metal, 9 ft. 4 in. dia. antitorque rotor.

SPECIFICATIONS

Rotor diameter: 56 ft. Overall length: 65 ft. 8 in. Height: 15 ft. 10 in. Empty weight: 7,675 lb. Gross weight: 13,000 lb. Overload gross wt: 14,000 lb.

PERFORMANCE

Max. speed (SL): 122 mph. Cruise speed (SL): 108 mph. Service ceiling: 9,500 ft. Hover ceiling (OGE): 2,400 ft. Max. range: 276 st. mi. Rate of climb: 1,100 fpm.

REMARKS

The Army procured a total of 437 Choctaws of all models through FY 65. The VH-34 version was used for VIP transport, notably as the first helicopters of the Executive Flight Detachment.

CH-37 MOJAVE

Medium cargo helicopter. Sikorsky Aircraft Div., Stratford, Conn.

ENGINES

Two Pratt & Whitney R-2800-54 piston engines of 2,100 hp each.

ROTOR SYSTEM

Single five-bladed main rotor and four-bladed metal 15 ft. dia. anti-torque rotor.

SPECIFICATIONS

Rotor diameter: 72 ft. Length: 88 ft. Height: 22 ft. Empty weight: 20,690 lb. Gross weight: 31,000 lb. Places: Crew of 3 and 36 troops or 24 litters.

PERFORMANCE

Max. speed (SL): 130 mph. Cruise speed (SL): 115 mph. Service ceilings: 8,700 ft. Hover ceiling (OGE): 1,100 ft. Max. range: 145 st. mi. Rate of climb: 910 fpm.

REMARKS

Since initial procurement in 1956, the Army has purchased 91 CH-37 Mojaves through FY 65. The Mojave is loaded through clam-shell doors in the aircraft's nose.

CH-47A CHINOOK

Medium transport helicopter. Boeing Vertol Div., Morton, Pa.

ENGINES

Two Lycoming T55-1-L-7 turbines of 2,650 shp each.

ROTOR SYSTEM

Tandem 3-bladed rotors.

SPECIFICATIONS

Rotor diameter: 59 ft. 1 in. Fuselage length: 51 ft. Overall length: 83 ft. Height: 18 ft. 6 in. Empty weight: 17,913 lb. Gross weight: 33,000 lb. Overload gross wt.: 38,550 lb.

PERFORMANCE

Max. speed (SL): 178 mph. Cruise speed (SL): 164 mph. Service ceiling: 9,500 lb. Hover ceiling, OGE: 7,750 ft. Max. range: 115 st. mi. Rate of climb: 1,750 fpm.

REMARKS

Since the initial date of procurement in 1960, the Army has added 198 Chinooks to its inventory. In 1963 the CH-47 was classified as the official Army medium transport helicopter. Armed and armored versions are now in operation in Vietnam. The Chinook can transport a full rifle platoon of 44 combat-equipped troops.

QUESTION:

what two Canadian sharp-toothed amphibians carry 8 and 14 fully-equipped troops (or 1800 and 4000 lbs. of combat gear) respectively □ can operate out of 1000 ft. airstrips □ run on dependable PT6A turboprops □ operate on wheels, skis, floats, amphibious floats or wheel/skis □ come from a company with 19 years' experience building rugged STOL aircraft □ are ideal for counter-insurgency, liaison and air-ambulance applications □

and come in your favorite camouflage?

Check:

the Turbo-Beaver (DHC-2 Mk III) and Twin-Otter (DHC-6)

by de Havilland Canada, world leaders in STOL.

THE DE HAVILLAND AIRCRAFT OF CANADA LIMITED
DOWNSVIEW ONTARIO

HO-1 DJINN

Two-place observation helicopter. Sud Aviation, Paris, France.

ENGINE

One Turbomeca Palouste 4 turbo-generator.

ROTOR SYSTEM

Single two-bladed main rotor, diameter 35 ft. 5 in. Air bled from compressor is fed to blade-tip ejectors providing thrust for rotational power.

SPECIFICATIONS

Fuselage length: 17 ft. 5 in., Height: 8 ft. 7 in. Empty weight: 794 lb. Max gross weight: 1,676 lb.

PERFORMANCE

Max. speed (SL): 78 mph. Cruise speed (SL): 62 mph. Hover ceiling OGE: 4,000 ft. Hover IGE: 2,500 ft. Range: 125 st. mi. Endurance: 2 hours 15 min.

REMARKS

The Army procured three YHO-1s for engineering and operational evaluation as an observation aircraft. It was the first helicopter to receive the new HO designation.

HO-3

Two-place observation helicopter, Brantley Helicopter Corp., Frederick, Oklahoma.

ENGINES

One Lycoming VO-360 engine of 162 hp.

ROTOR SYSTEM

Single three-bladed; Brantley designed two-section blades.

SPECIFICATIONS

Rotor diameter: 28 ft. 3 in. Overall length: 21 ft. 9 in. Height: 6 ft. 9 in. Empty weight: 1,020 lb. Gross weight: 1,670 lb.

PERFORMANCE

Max. speed (SL): 100 mph. Cruise speed (SL): 90 mph. Service ceiling: 9,000 ft. Hover ceiling (IGE): 4,000 ft. Normal range: 250 st. mi. Rate of climb: 1,400 fpm.

REMARKS

The Army purchased five HO-5s for evaluation. The aircraft had skid gear instead of wheels.

CH-54A SKYCRANE

Heavy lift helicopter. Sikorsky Aircraft Div., Stratford, Connecticut.

ENGINES

Two Pratt & Whitney JFTD-12A-1 turbines of 4,050 shp each.

ROTOR SYSTEM

Single six-bladed main rotor and four-bladed metal, 15 ft. 4 in. dia. anti-torque rotor.

SPECIFICATIONS

Rotor diameter: 72 ft. Overall length: 88 ft. 7 in. Height: 25 ft. 7 in. Empty weight: 18,217 lb. Gross weight: 38,000 lb. Alt. gross wt.: 42,000 lb. Crew of 3 plus 57 troops in special passenger pod.

PERFORMANCE

Max. speed (SL): 117 mph. Cruise speed (SL): 109 mph. Service ceiling: 10,500 ft. Hover ceiling (OGE): 7,000 ft. Max. range: 230 st. mi. Rate of climb: 1,400 fpm.

REMARKS

Since initial procurement in July 1964, the Army has purchased six Skycranes through FY 65. The CH-54 carries a 10-ton payload and is designed to carry its cargoes externally. It has a rear-facing seat for the third crew member to have a clear view of the load during pickup and delivery, which can be accomplished without landing by means of a hoist.

OH-4A

Four-place light observation helicopter. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One Allison T63 turbine engine of 250

ROTOR SYSTEM

Single two-bladed main rotor system, two-bladed tail rotor, metal, 5 ft. 2 in. diameter.

SPECIFICATIONS

Rotor diameter: 33.3 ft. Length: 38 ft. 8 in. Height: 8 ft. 10 in. Empty weight: 1,536 lb. Gross weight: 2,573 lb.

PERFORMANCE

Max. speed (SL): 135 mph. Cruise speed (SL): 111 mph. Cruise speed, 5,000': 111 mph. Service ceiling: 20,000 ft. Hover ceiling (OGE): 8,000 ft. Max. range: 283 st. mi. Endurance: 2 hrs. 35 min. Rate of climb: 1,100 fpm.

REMARKS

The OH-4A was the first of three LOH competitors to fly, taking to the air in December, 1962. Five OH-4s were delivered to the U.S. Army Aviation Test Board for tests and evaluation in January, 1964.

OH-5A

Four-place light observation helicopter. Hiller Aircraft Company, Palo Alto, California.

ENGINES

One Allison T63-A-5 turbine engine of 250 shp.

ROTOR SYSTEM

Single two-bladed Hiller "L" rotor by Parsons. Two-bladed metal anti-torque rotor.

SPECIFICATIONS

Rotor diameter: 35 ft. 6 in. Empty weight: 1,370 lb. Gross weight: 2,530 lb.

PERFORMANCE

Max. speed (SL): 128 mph. Service ceiling: 17,200 ft. Hover ceiling (OGE): 12,000 ft. (IGE): 16,900 ft. Endurance: 8.1 hours. Rate of climb: 1,850 fpm.

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 OH-5A was eliminated from the LOH competition. A modified version of the Hiller LOH is marketed as the FH-1100.

OH-6 PAWNEE

Four-place light observation helicopter. Hughes Tool Co, Aircraft Div., Culver City, California.

ENGINES

One Allison T63-A-5A turbine of 252 shp (derated).

ROTOR SYSTEM

Single four-bladed main rotor and two-bladed metal anti-torque rotor, 4 ft. 2 in. diameter.

SPECIFICATIONS

Rotor diameter: 26 ft. 4 in. Overall length: 30 ft. 4 in. Fuselage length: 23 ft. Height: 8 ft. 6 in. Empty weight: 1,156 lb. Mission gross wt.: 2,163 lb. Overload gross wt.: 2,700 lb.

PERFORMANCE

Max. speed (SL): 150 mph. Cruise speed (SL): 150 mph. Cruise speed, 5,000 ft.: 140 mph. Service ceiling: 18,700 ft. Hover ceiling (OGE): 11,400 ft. (IGE): 15,400 ft. Max. range: 394 st. mi. Endurance: 4.1 hours. Rate of climb: 2,120 fpm.

REMARKS

The OH-6A is the winning design of three LOH proposals tested and evaluated by the U.S. Army Aviation Test Board. The initial date of procurement for the Pawnee was May 26, 1965, with an order for 714, delivery to begin in June 1966.

OH-13S SIOUX

Three-place observation helicopter. Bell Helicopter Company, Fort Worth, Tex.

ENGINES

One Lycoming TVO-435-25 turbo-supercharged engine of 260 hp.

ROTOR SYSTEM

Single two-bladed metal main rotor. Two-bladed metal tail rotor, 5 ft. 10 in. diameter.

SPECIFICATIONS

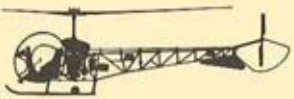
Rotor diameter: 37 ft. Overall length: 43 ft. 3 in. Fuselage length: 32 ft. 7 in. Height: 9 ft. 3 in. Empty weight: 1,936 lb. Gross weight: 2,850 lb.

PERFORMANCE

Max. speed (SL): 105 mph. Cruise speed (SL): 93 mph. Cruise speed, 5,000': 92 mph. Service ceiling: 18,000 ft. Hover ceiling (OGE): 15,000 ft. Max. range: 324 st. mi. Endurance: 2 hours. Rate of climb: 1,190 fpm.

REMARKS

The Army has procured a total of 283 OH-13S models through FY 65.



TH-13 SIOUX

The Army has procured 220 OH-13 T models through FY 65. Navigational equipment in this ship includes VOR, ADF, glide slope, slaved gyro compass, and attitude indicator. Portions of the bubble are blacked out to allow for hooded flight training.

OH-23D

Three-place observation helicopter. Hiller Aircraft Company, Palo Alto, California.

ENGINES

One Lycoming VO-435-23B engine of 250 hp.

ROTOR SYSTEM

Single two-bladed main rotor, metal blades by Parsons, Hiller Rotormatic system.

SPECIFICATIONS

Rotor diameter: 35 ft. 5 in. Fuselage length: 27 ft. 9 in. Overall length: 40 ft. 8 in. Empty weight: 1,816 lb. Gross weight: 2,700 lb.

PERFORMANCE

Max. speed (SL): 95 mph. Cruise speed (SL): 82 mph. Service ceiling: 13,200 ft. Hover ceiling (OGE): 5,200 ft. (IGE): 1,250 ft. Max. range: 197 st. mi. Rate of climb: 1,050 fpm.

REMARKS

The "D" model Raven has been used mainly as the primary helicopter trainer until late 1965 when it began being replaced by the TH-55A. The OH-23 is still in use operationally in the field.

OH-23G

Three-place observation helicopter. Hiller Aircraft Company, Palo Alto, California.

ENGINES

One Lycoming VO-540 engine of 305 hp.

ROTOR SYSTEM

Single two-bladed main rotor. Two-bladed tail rotor, 5 ft. 6 in. diameter.

SPECIFICATIONS

Rotor diameter: 35 ft. 5 in. Fuselage length: 28 ft. 6 in. Overall length: 40 ft. 8 in. Height: 10 ft. 2 in. Empty weight: 1,759 lb. Gross weight: 2,800 lb.

PERFORMANCE

Max. speed (SL): 96 mph. Cruise speed (SL): 90 mph. Service ceiling: 15,200 ft. Hover ceiling (OGE): 5,800 ft. Max. range: 225 st. mi. Rate of climb: 1,290 fpm.

REMARKS

The "F" model is the same as the "G" with the following exceptions: fuselage length — 29 ft. 6 in.; four-place; and the empty weight is 1,813 lb.

TH-55A

Two-place primary trainer helicopter. Hughes Tool Company, Aircraft Div., Culver City, Cal.

ENGINES

One Lycoming HIO-360-B1A engine of 180 hp.

ROTOR SYSTEM

Single three-bladed main rotor and four-bladed metal anti-torque rotor, 3 ft. 4 in. diameter.

SPECIFICATIONS

Rotor diameter: 25 ft. 3½ in. Overall length: 22 ft. 4 in. Height: 8 ft. 3 in. Empty weight: 1,008 lb. Gross weight: 1,600 lb.

PERFORMANCE

Max. speed (SL): 86 mph. Cruise speed, 5,000': 81 mph. Service ceiling: 11,500 ft. Hover ceiling (OGE): 4,000 ft. (IGE): 6,400 ft. Max. range: 187 st. mi. Endurance: 2.5 hours. Rate of climb: 1,350 fpm.

REMARKS

The TH-55A (formerly designated the HO-2) was purchased as an off-the-shelf item after tests and evaluation by the Army. The initial date of procurement was Nov. 1964. By June 30, 1965, 257 TH-55As had been brought into the Army inventory.

UH-1B IROQUOIS

Nine-place utility helicopter. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One Lycoming T53-L-11 turbine engine of 1,100 shp.

ROTOR SYSTEM

Single two-bladed main rotor. (Later models will have the model 540 "Door-hinge" rotor system).

SPECIFICATIONS

Rotor diameter: 44 ft. Overall length: 53 ft. Fuselage length: 42 ft. 7 in. Height: 12 ft. 8 in. Empty weight: 4,523 lb. Gross weight: 6,600 lb.

PERFORMANCE

Max. speed (SL): 138 mph. Cruise speed (SL): 101 mph. Cruise speed, 5,000': 101 mph. Service ceiling: 16,700 ft. Hover ceiling (OGE): 2,500 ft. (IGE): 8,200 ft. Max. range: 312 st. mi. Rate of climb: 2,350 fpm.

REMARKS

The Army has procured a total of 1,306 UH-1Bs from 1960 to the end of FY 65. The original Army designation, HU-1, gave rise to the common nick name "Huey". The Bell H-40 was produced as an aero-medical ambulance, but because of its versatility became an interim replacement for the piston powered cargo helicopters. (All figures listed here are based on the UH-1B at max. gross weight and with the standard rotor).

UH-1D IROQUOIS

Thirteen-place tactical transport helicopter. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One Lycoming T53-L-11 turbine engine of 1,100 shp.

ROTOR SYSTEM

Single two-bladed metal main rotor. Two-bladed metal anti-torque rotor, 8 ft. 6 in. diameter.

SPECIFICATIONS

Rotor diameter: 48 ft. Overall length: 53 ft. 10 in. Fuselage length: 41 ft. 11 in. Height: 13 ft. 5 in. Empty weight: 4,796 lb. Normal gross wt.: 6,600 lb. Max. gross wt.: 9,500 lb.

PERFORMANCE

Max. speed (SL): 139 mph. Cruise speed (SL): 135 mph. Cruise speed, 5,000': 135 mph. Service ceiling: 22,000 ft. Hover ceiling (OGE): Sea level. (IGE): 7,000 ft. Range: 355 st. mi. Endurance: 3.3 hours. Rate of climb: 1,346 fpm.

REMARKS

Since the initial date of procurement in 1961, the Army has purchased 1,254 Iroquois through FY 65. Incorporation of the T53-L-13 engine in January 1967 should substantially improve hot day performance.

UH-2

A compound version of the utility helicopter. Kaman Aircraft Corporation, Bloomfield, Conn.

ENGINES

One GE T58-8 turbine engine of 1,250 shp, and one GE J-85 turbojet of 2,500 lb/thrust for auxiliary propulsion.

ROTOR SYSTEM

Single four-bladed main rotor. Three-bladed tail rotor, 9 ft. 4 in. diameter.

SPECIFICATIONS

Rotor diameter: 44 ft. Length: 52 ft. 6 in. Height: 13 ft. 7 in. Empty weight: 6,100 lb. Gross weight: 8,637 lb.

PERFORMANCE

Max. speed (SL): in excess of 225 mph. No other performance figures available.

REMARKS

The UH-2 compound Seasprite 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 an auxiliary jet engine added.

XH-51A

Two-place research helicopter. Lockheed-California Company, Burbank, California.

ENGINES

One United Aircraft of Canada PT-6B-6 turbine engine of 500 shp.

ROTOR SYSTEM

Single four-bladed Lockheed rigid-rotor system. 6.5 ft. tail rotor.

SPECIFICATIONS

Rotor diameter: 35 ft. Fuselage length: 32 ft. 4 in. Height: 8 ft. 2 in. Empty weight: 3,100 lb. Gross weight: 4,000 lb.

PERFORMANCE

Max. speed (SL): 174-plus mph. Cruise speed (SL): 144 mph. Hover ceiling (OGE): 7,000 ft. Range: 287 st. mi. Endurance: 2.7 hr. Rate of Climb: 1,850 fpm.

REMARKS

The XH-51A was developed under a joint Army/Navy contract as a research vehicle for high performance rotary wing aircraft. The first flight of the XH-51A was in Nov. 1962. It is equipped with retractable landing gear.

XH-51A

Two-place research compound helicopter. Lockheed-California Company, Burbank, California.

ENGINES

One United Aircraft of Canada PT-6B-6 turbine of 500 shp, and one Pratt & Whitney JT-12A turbojet.

ROTOR SYSTEM

Single four-bladed Lockheed rigid rotor system. Two-bladed tail rotor, 6.5 ft. diameter.

SPECIFICATIONS

Rotor diameter: 35 ft. Fuselage length: 32 ft. 4 in. Height: 8 ft. 2 in. Wing span: 16 ft. 10.5 in. Empty weight: 3,800 lb. Gross weight: 4,700 lb.

PERFORMANCE

Max. speed (SL): 272 mph. Cruise speed (SL): 230 mph. Service Ceiling: 20,000 ft. Hover Ceiling (OGE): 2,500 ft. Range: 270 st. mi. Endurance: 4 hrs. Rate of Climb: 3,500 fpm.

REMARKS

This compound helicopter is basically an XH-51A with stub wings and a jet engine added. The aircraft was developed under an Army-sponsored program.

YUH-1B

Research compound helicopter. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One Lycoming T53-L-11 turbine engine of 1,100 shp and two J69-T27 turbojet engines of 1,260 lb/thrust each.

ROTOR SYSTEM

Single two-bladed main rotor with tapered blade tips. Two-bladed tail rotor.

SPECIFICATIONS

The aircraft is basically the UH-1B with modifications for mounting the two turbojet engines, two stub wings, and the addition of fairings around the mast and cross tubes. Rotor diameter: 44 ft. Overall length: 53 ft. Fuselage length: 42 ft. 7 in. Height: 12 ft. 8 in.

PERFORMANCE

The YUH-1B has been flown in excess of 250 mph in level flight. No other performance data available.

REMARKS

The YUH-1B was developed under a joint program by Bell Helicopter Company and the U.S. Army Transportation Research Command (TRECOM).

SIOUX SCOUT

Two-place experimental armed helicopter. Bell Helicopter Company, Fort Worth, Texas.

ENGINES

One Lycoming TVO-435 turbo supercharged engine of 260 hp.

ROTOR SYSTEM

Single two-bladed main rotor 37 ft. diameter. Two-bladed metal tail rotor, 5 ft. 10 in. diameter.

REMARKS

The Scout was an extensively modified OH-13 featuring aerodynamic refinements for reduced drag, stub wings, internal fuel cells, an integrated nose gun system, mounting points for external stores, and increased maneuverability. Tests on the Scout led to concepts for design of the AH-56A Huey-Cobra.

16H-1A

Eight-place developmental compound, ring-tail helicopter. Piasecki Aircraft Corp., Philadelphia, Pa.

ENGINES

One GE T58 turbine engine of 1,250 shp.

ROTOR SYSTEM

Single three-bladed main rotor and a single tail-mounted ducted prop. for forward propulsion and anti-torque directional control.

SPECIFICATIONS

Rotor diameter: 44 ft. Empty weight: 4,550 lb. VTOL gross weight: 8,000 lb. STOL gross weight: 10,500 lb.

PERFORMANCE

Max. speed (SL): 225 mph.

REMARKS

Developed under a joint Army-Navy contract, the 16H-1A was rolled out in August 1965. Stub wings and retractable landing gear enhance the Pathfinder II's performance. Complete performance data not available at this time.

AAFSS

AAFSS (Advanced Aerial Fire Support System) is a two-place high-speed compound, armed helicopter. Lockheed-California Co., Burbank, California.

ENGINES

One General Electric T-64-GE-16 turbine of 3,435 shp.

ROTOR SYSTEM

Single rigid main rotor. Anti-torque rotor plus separate pusher prop for horizontal mode propulsion.

SPECIFICATIONS

Rotor diameter: 50 ft. 4.8 in. Static length: 54 ft. 8 in. Height: 14 ft. 1 in. Empty weight: 11,718 lb. Gross weight: 16,995 lb.

PERFORMANCE

Max. speed (SL): 254 mph. Cruise speed (SL): 242 mph. Cruise speed, 10,000': 238 mph. Service ceiling: 26,000 ft. Hover ceiling (OGE): 10,600 ft. Range: 875 st. mi. Endurance: 5.4 hrs. Max. rate of climb: 3,420 fpm. Vertical rate of climb: 2,100 fpm.

REMARKS

This AAFSS proposal is the winning design chosen from open competition in Nov. 1965. Development is under way at the Lockheed-California plant in Van Nuys, Cal. The first AAFSS model is designed to be a heavyweight ground-attack vehicle, having the capacity to carry large quantities of all types of heavy ordnance, including the largest iron bombs and napalm.

ARMY AVIATION MATERIEL ISSUE

V/STOL AND GEMS

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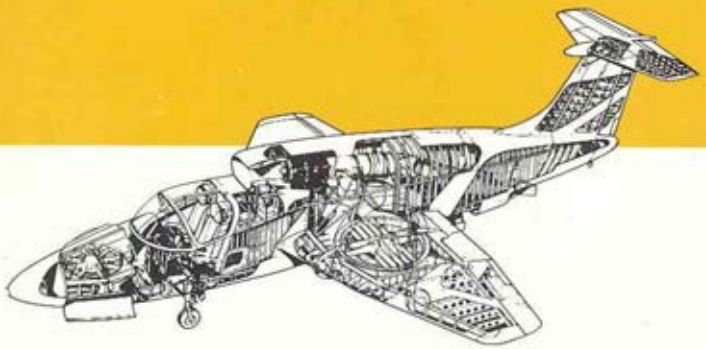


VZ-1E

Greater mobility for the individual soldier on scouting and reconnaissance missions was the object of this research vehicle by Hiller Aircraft. The flying platform was kinesthetically controlled. A ducted fan, powered by three 40 hp Nelson H-59 engines, provided propulsion and lift. The VZ-1, known as the Pawnee, weighed approximately 465 lbs.

VZ-2PH

A research tilt-wing aircraft built by Boeing Vertol that operated both as a vertical take-off and landing aircraft and as a conventional plane. The VZ-2PH aircraft completed full transition from vertical take-off to cruise and back to vertical landing in July, 1958. The interconnected propellers were powered by one T-53 gas turbine engine.

VZ-3RY

A research aircraft built by Ryan employing two propeller deflected slipstreams. Vertical flight was achieved by deflecting the slipstreams downward by means of a high-flapped wing. The propellers were interconnected and powered by a single T-53 turbine engine mounted in the fuselage.

VZ-4DA

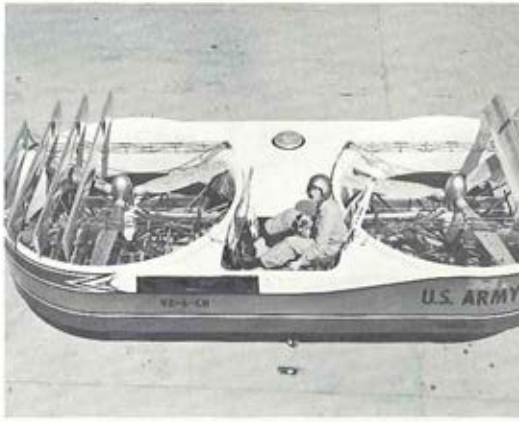
This VTOL aircraft was built by Doak with ducted propellers on the wing tips that rotated through 90 degrees to convert the plane in flight. To land, the propellers were again turned to the vertical position. The entire plane maintained the conventional horizontal attitude at all times. One T-53 turbine engine powered the interconnected ducted propellers.

VZ-5FA

A research aircraft built by Fairchild that achieved VTOL capability by deflecting the slipstream downward by means of a high-flapped wing. The four interconnected propellers were powered by a single T-58 turbine engine. NASA conducted wind tunnel and flight tests.

VZ-6CH

A single place research aircraft designed by Chrysler to explore the aerial jeep concept. Shafting from a single 380 hp reciprocating engine transmitted power to the two ducted propellers. Propulsion was obtained from a combination of vehicle nose down attitude and the rearward propeller slipstream deflection accomplished by duct exit vanes.

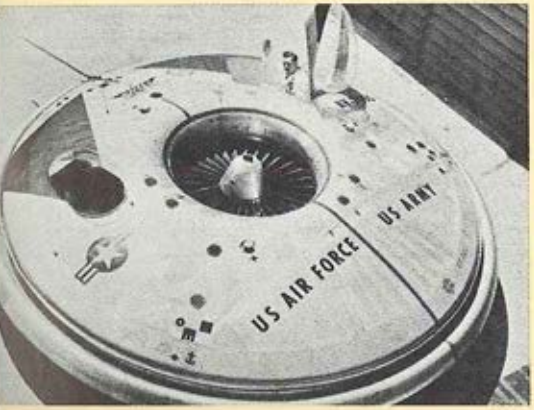


VZ-7AP

This aerial jeep research vehicle was originally designed and constructed by Curtiss-Wright utilizing four ducted fans. Finally the ducts were removed. The vehicle was powered by a single Artouste II turbine.

VZ-8PB

An aerial jeep research vehicle powered by two Artouste II turbine engines. Developed by Piasecki, the VZ-8PB derived lift from two 3-bladed rotors. An earlier version, utilizing a single turbine, made its first flight in 1958. The craft's low silhouette enabled it to hug the ground, fly under low bridges, between buildings or other obstacles.



VZ-9A

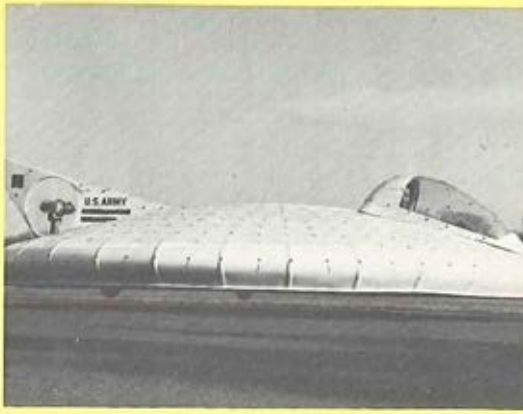
Designed to explore vertical take-off and landing techniques, this vehicle operated in ground effect only. Developed by AVRO Aircraft of Canada under U.S. Army and Air Force sponsorship.

CW AIRCAR

A 4-place Ground Effects Machine (GEM), designed by Curtiss-Wright to skim 6 to 12 inches off the round at speeds up to 35 miles per hour. Two of these machines were bought "off-the-shelf" to obtain research information on basic operating principles.

PRINCETON GEM

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



HZ-1DE

One of several approaches to the flying platform, this research vehicle by DeLackner provided data on the unducted propeller concept for an individual lift device. A later version used metal skids as landing gear instead of the outriggers and inflated rubber bags. Power was supplied by a 40 hp Kiekhaefer Mercury Mark 55 engine.

XV-4A

Experimental VTOL aircraft. Lockheed-Georgia Company, Marietta, Georgia.

ENGINES

Two Pratt & Whitney JT-12 turbo jets of 3,200 lb/thrust each. 40% augmentation for a total of 8,300 lb/thrust in VTOL mode.

LIFT SYSTEM

The aircraft achieves 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. Bombay-type doors in the top and bottom of the fuselage open to expose the mixing chambers and nozzles.

SPECIFICATIONS

Span: 25 ft. 10 in. Length: 33 ft. Height: 11 ft. 9 in. Empty weight: 5,000 lb. VTOL gross weight: 7,200 lb.

PERFORMANCE

Max. speed (SL): 660 mph. Service ceiling: 50,000 ft. Range: 920 st. mi. Rate of climb: 18,000 fpm.

REMARKS

In mid-1966, the U.S. Air Force took over operational control of the XV-4A.

XV-5A

Experimental fan-in-wing aircraft. Ryan Aeronautical Co., San Diego, Calif.

ENGINES

Two GE J85-5 turbines of 2,650 shp 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 ft. 9 in. Length: 44 ft. 6 in. Height: 14 ft. 8 in. Empty weight: 7,500 lb. VTOL gross weight: 12,500 lb. STOL gross weight: 15,500 lb.

PERFORMANCE

Max. speed (SL): 545 mph. Cruise speed, 30,000': 440 mph. Service ceiling: 45,000 ft. Hover ceiling (OGE): 12,000 ft. Max. range: 1,200 st. mi. Rate of climb: 9,500 fpm.

REMARKS

Two XV-5As have been built under the Army program. Transition to forward flight is accomplished by vectoring control vanes (louvers) mounted under the back wing fan.

(WHERE/Continued from Page 20)

tuxent River Naval Air Station and on the carrier *Independence*. Testing is now underway at Eglin AFB by the Air Force. The tri-service program is scheduled for completion later this month following which the aircraft will go to NASA and the Air Force for further evaluation.

In 1961, the entire V/STOL situation was reviewed by a DOD/Tri-Service Committee headed by *Dr. Courtland Perkins*. This group reviewed the status of V/STOL technology including the results of numerous test beds which had been flown – primarily under Army sponsorship

It was determined that technology could clearly produce a V/STOL aircraft capable of performance substantially higher than could be expected with helicopters. However, it was not clear that militarily useful aircraft would result or to what degree helicopters and conventional systems could be replaced.

Tri-service program

To investigate these areas, it was agreed to establish a tri-service V/STOL program to develop a full scale V/STOL transport suitably configured to conduct operational testing. After an extensive design competition, the *XC-142* V/STOL transport (Page 98) was selected and development was initiated. It was not developed in a complete production configuration.

The tilt-wing design was selected for this investigation as having the greatest probability of success of any of the V/STOL concepts considered. The principal objectives of this program are to provide technical data and conduct tests into operational problems of a tilt-wing V/STOL assault transport.

Tests to date have demonstrated all phases of flight – vertical, conventional, and transition. Testing by a tri-service group at Edwards AFB will continue through 1967. Until substantive data are available from field testing of the *XC-142A* in the Army environment, a determination cannot be made as to the applicability of this or similar V/STOL

concepts to the Army mission, or to an Air Force mission in support of the Army.

In the past, Army procurement and R&D programs in the transport aircraft area have been based upon continuing the *CH-47* and the *CV-2/7* aircraft in the Army inventory as a team in meeting the tactical airlift requirements. Development efforts have been focused on product improvement of each of these types of aircraft and on exploration of the practicability of developing a single aircraft to replace both the *CV-2/7* and the *CH-47*.

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

In the event that a tilt wing is found suitable to replace both the *CH-47* and the *CV-2*, a determination should then be made as to proportionate numbers of this aircraft to be assigned to the Army for battlefield mobility and the Air Force for logistics.

Research helicopters . . .

Our most recent undertaking in this area is the *Research Helicopter Program*, the object of which is to advance the state-of-the-art of rotary wing aircraft

technology and advance the operational capabilities by designing, fabricating or modifying, evaluating and testing promising experimental aircraft of various configurations and major subsystems thereof.

Flight testing of several compound helicopters has been conducted and speeds up to 236 knots have been attained. Follow-on testing of selected compound helicopters is under consideration. The Lockheed *XH-51A* rigid rotor compound helicopter (Page 82) has provided valuable data in support of the *AAFSS* development.

Composite aircraft . . .

At this time, the major effort in the *Research Helicopter Program* is an advanced *High Speed Rotary Wing Aircraft*, frequently called the *High Speed Composite Aircraft*. This aircraft will combine the good hover capabilities of the helicopter and the efficient high speed characteristics of the fixed wing aircraft. The aircraft will be designed to operate in the 0-300/400 knot speed range.

Essentially, the aircraft will operate in the lower portion of the speed spectrum much the same as the compound helicopter. As speed increases, a fixed wing gradually assumes the aerodynamic load from the rotor. When the rotor is unloaded, it will be either stopped, stowed, or tilted, and the aircraft will operate in the cruise mode as a fixed wing aircraft. To land, the procedures are reversed.

REGULAR ISSUE

The ARMY AVIATION Materiel Issue is published as one of the subscriber's regular issues, and takes the place of the normal August "news issue." The editors welcome corrections and additions from all sources.

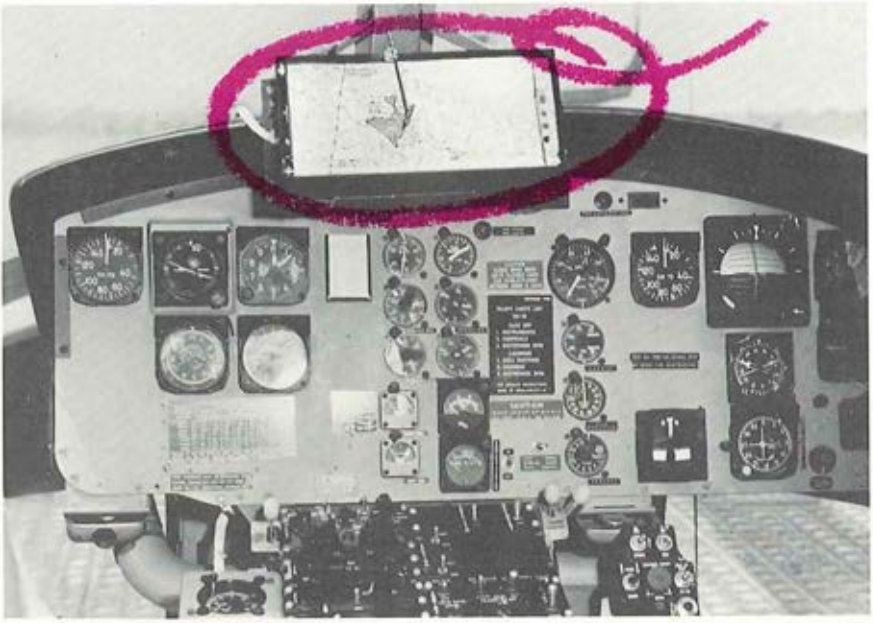
In November 1965, contracts were awarded to Bell, Hughes, and Lockheed for the preliminary design study of different approaches to the *High Speed Composite Aircraft*. It is planned that one of the designs will be selected and fabrication of full-scale test aircraft will be undertaken.

The fallout . . .

Most of the fruit of our efforts will be reflected in aircraft of the future; however, some of it we see today or will see in the immediate future. Some examples are:

- This summer the *OH-6* (Page 75) goes into service – a faster, more capable helicopter than we believed could be built back in the 50's. It has flown nonstop coast to coast and established a world's speed record of 172.4 mph.
- The Huey *COBRA*, (Page 61), the first operational helicopter using the unloaded rotor principle, is expected to be delivered by mid-1967. Designated the *AH-56A*, it will have a high speed in excess of 170 knots.
- The *AAFSS* (Page 84), built by Lockheed and employing the rigid-rotor, wings to unload the rotor, and pusher prop, will be the first operational compound helicopter. This aircraft will incorporate the knowledge we have gained in our research efforts to date.

I feel sure that this issue of *Army Aviation Magazine* will serve as a most reflective reminder of the "good old days" for many of you. For those who have never handled mechanical flaps or shot an autorotation in an H-13 with wheels, it will serve as reminder of the tremendously progressive trend in our magnificent Army aviation family.



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XV-6A

One-place vectored thrust V/STOL aircraft. Hawker Siddeley Aviation Ltd., Kingston-Upon-Thames, England.

ENGINES

One Bristol Siddeley Pegasus engine of 15,500 lbs/thrust.

SPECIFICATIONS

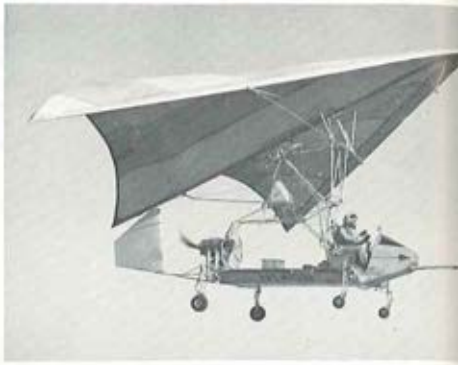
Span: 22 ft. 10 in. Length: 42 ft. 4 in. Height: 10 ft. 8 in. Empty weight: 10,180 lb. Gross weight: 17,500 lb.

PERFORMANCE

Max. speed (SL): 0.91 Mach. Cruise speed (SL): 0.89 Mach. Cruise speed, 10,000': 0.90 Mach. Service ceiling: 45,000 ft. Max. range: 1,245 st. mi. Endurance: 2.75 hours. Rate of climb: 13,000 fpm.

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. These six XV-6As (formerly designated the P-1127) are now undergoing service testing in CONUS. The aircraft has exceeded the speed of sound in forward flight.



XV-8A FLEEP

One-place flex-wing utility vehicle. Ryan Aeronautical Company, San Diego, California.

ENGINES

One Continental pusher piston engine of 210 hp.

SPECIFICATIONS

Span: 33 ft. 5 in. Length: 26 ft. Empty weight: 1,029 lb. Gross weight: 2,359 lb.

PERFORMANCE

Max. speed (SL): 81 mph. Cruise speed (SL): 55 mph. Max. range: 133 st. mi.

REMARKS

The XV-8A is a light aircraft with short field landing capability designed as a simple flying truck to operate from unimproved areas. The Fleep uses wings of flexible material attached to a keel. Leading edge members form a V-shaped kite-like surface.

The OV-10A is tough, reliable, versatile, and easy to maintain.
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The T76 weighs approximately 300 pounds, and produces over 680 ESHP (still more powerful versions are now being run-in). This power-to-weight ratio means bigger payloads, higher performance, and longer-range tactical and support missions.

If you'd like to know more about the design and performance of the T76 turboprop engine, write: Aircraft Engine Sales, AiResearch Manufacturing Company, 402 S. 36th Street, Phoenix, Arizona 85034.

GARRETT

AIRESEARCH MILITARY AIRCRAFT PROPULSION

XV-9A

Two-place hot cycle research helicopter. Hughes Tool Co., Aircraft Div., Culver City, California.

ENGINES

Two GE YT64 gas generators.

ROTOR SYSTEM

Single three-bladed main rotor driven by blade tip propulsion.

SPECIFICATIONS

Rotor diameter: 55 ft. Fuselage length: 45 ft. Height: 12 ft. Empty weight: 8,600 lb. Gross weight: 15,300 lb. Overload gross wt.: 25,500 lb.

PERFORMANCE

Max. speed (SL): 138 mph. Cruise speed (SL): 92 mph. Cruise speed, 5,000': 92 mph. Service ceiling: 17,300 ft. Hover ceiling (OGE): 13,200 ft. Rate of climb: 2,000 fpm.

REMARKS

In September 1962, the Army procured one XV-9A aircraft for research, testing, and evaluation.

X-19

Six-place experimental V/STOL aircraft. Curtiss-Wright Corp., Wood-Ridge, New Jersey.

ENGINES

Two Lycoming T55-L-7 turbines of 2,650 shp each.

PROPELLERS

Four Curtiss-Wright plastic three-bladed 13 ft. dia. propellers cross-shafted and mounted on ends of two stub wings.

SPECIFICATIONS

Span: 34 ft. 6 in. Length: 44 ft. 5 in. Height: 17 ft. Empty weight: 9,750 lb. Gross weight (VTOL): 13,660 lb. Gross weight (STOL): 14,750 lb.

PERFORMANCE

Max. speed (SL): 460 mph. Cruise speed (SL): 400 mph. Max. range: 520 st. miles. Rate of climb: 3,250 fpm.

REMARKS

Two aircraft were procured under a tri-service contract managed by the U.S. Air Force. One X-19 was destroyed in an accident in late 1965. No longer an active project.

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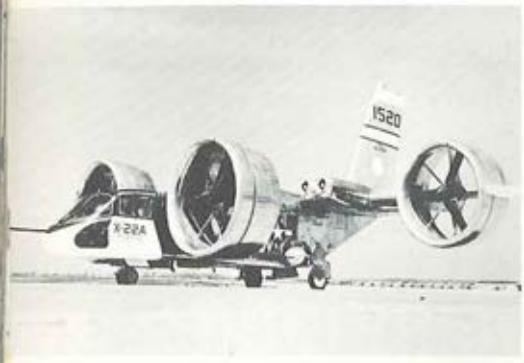

X-22A

Eight-place research V/STOL transport aircraft. Bell Aerosystems, Buffalo, New York.

ENGINES

Four GE YT58-8D turbines of 1,250 shp mounted on aft wing.

PROPELLERS

Four 3-bladed Hamilton Standard, seven ft., cross-shafted propellers.

SPECIFICATIONS

Span: 39 ft. 3 in. Length: 39 ft. 7 in. Height: 20 ft. 8 in. Empty weight: 10,500 lb. Gross weight, VTOL: 15,980 lb. Gross weight, STOL: 17,680 lb.

PERFORMANCE

Max. speed (SL): 325 mph. Cruise speed (SL): 210 mph. Cruise speed, 10,000': 230 mph. Service ceiling: 28,000 ft. Hover ceiling (OGE): 9,000 ft. Max. range: 558 st. mi. Endurance: 3 hours. Rate of climb: 5,900 fpm.

REMARKS

The roll-out of the first X-22A was on May 25, 1965. First hover flights were made on March 17, 1966. The aircraft is built under a tri-service contract, the program being managed by the U.S. Navy.

XC-142A

Tilt-wing, deflected slipstream, V/STOL medium transport aircraft. LTV Aerospace Corp., Dallas, Texas.

ENGINES

Four GE T64-6 turboprops of 3,080 shp each.

PROPELLERS

Hamilton Standard four-bladed fiberglass, 15 ft. 6 in. diameter, cross-shafted. Three-bladed tail rotor for longitudinal control at low speeds.

SPECIFICATIONS

Span: 67 ft. 6 in. Length: 58 ft. Height: 26 ft. Empty weight: 23,000 lb. Gross weight, STOL: 41,500 lb. Gross weight, VTOL: 37,500 lb. Places: 35.

PERFORMANCE

Max. speed (SL): 430 mph. Cruise speed (SL): 285 mph. Cruise speed, 10,000': 345 mph. Service ceiling: 25,000 ft. Hover ceiling (OGE): 6,000 ft. Max. range: 460 st. mi. Endurance: 6.5 hours. Rate of climb: 6,800 fpm.

REMARKS

Five XC-142As have been built under a tri-service developmental program with Hiller Aircraft, and Ryan Aeronautical as associate contractors.

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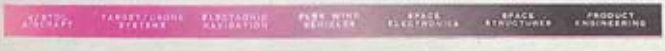
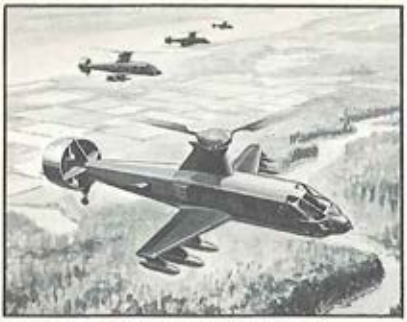
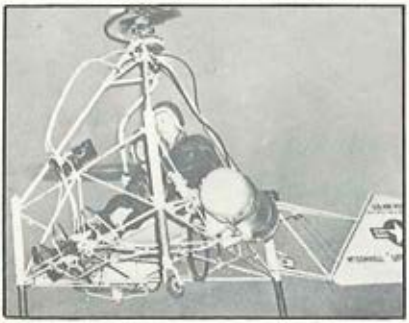




Piasecki 16H-1B Pathfinder, 1964

Kaman HOK-1, 1957

Fairchild-Hiller



McDonnell H-20, 1952

Del Mar DH-2C Target Drone, 1966

Bell Aerosyste

Bell H-12

Bell Aerosystems X-14, 1959

Goodyear I

Bell twin-engine UH-1D, 1966

Del Mar Whirlymite, 1966

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Vertol 6-engine V/STOL, 1959

Bell Winged Helicopter, 1963

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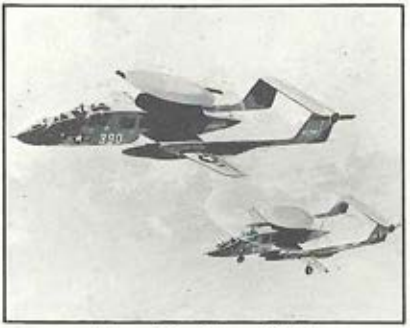
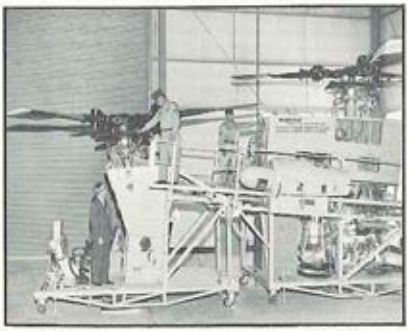


Ryan Disc-Rotor, 1966



CH-47 Composite Trainer, 1963

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Canadair CL-84 Tilt-Wing, 1965

Sikorsky VH-3A, 1962

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Cessna L-27 (USAF), 1964

L-23 with fuel tank outriggers

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