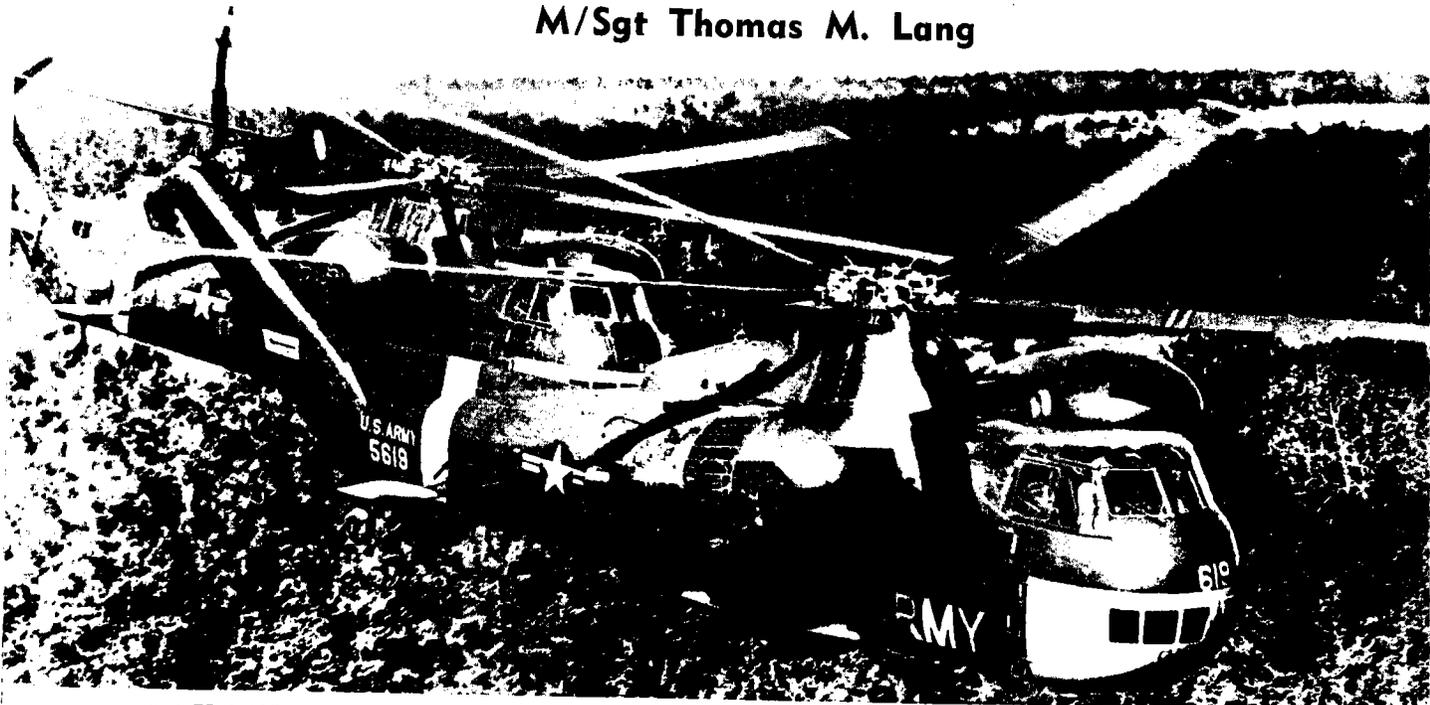


The Army Aviation Story

Part IV

Rotary Wing Aircraft

M/Sgt Thomas M. Lang



BY 1945 commercial helicopters had become reliable enough to attract the attention of many Army officers who were keenly interested in adapting them to military usage. Army Ground Force (AGF) pilots were sent to the Bell Helicopter Company plant at Buffalo, N. Y., where they witnessed demonstrations of the YR-13.

On 25 November 1946 a contract was let for 27 YR-13s for the Armed Forces. Fourteen of these were earmarked for the AGF and became the first helicopters obtained for Army Aviation. Two of the 27 aircraft went to the Marines, two to the Coast Guard, and the rest to the Army Air Forces.

The AGF's first two YR-13s were picked up in early January 1947 by Capt Kenworthy

Doak and Lt Robert R. Yeats. They accompanied the aircraft via Army Air Force transport plane to Ladd Field, Fairbanks, Alaska, for Arctic testing.

Shortly after, Capt Thomas J. Rankin and Lt Norman Goodwin picked up two more YR-13s and took them via surface transportation to Camp McCoy, Wis., for testing. Early in the summer of 1947 another YR-13 was taken to the Army Field Forces Board No. One at Fort Bragg, N. C., for testing. Later that aircraft was lost in an accident, but two more YR-13s were soon sent to Board One. The remainder of the original 14 went to the 82d Airborne Division at Bragg.

Early indications were that engineer and signal units would be the most logical users of

helicopters. However, as tests progressed, the astonishing versatility of the helicopter became more apparent and plans were made to expand the helicopter program within the Army.

On 5 August 1947, Gen Jacob L. Devers, CG, Army Ground Forces (USCONARC) at Fort Monroe, Va., wrote a letter to the Chief of Staff, U. S. Army, requesting authorization for the purchase of 150 two-place helicopters. He also requested that 50 of the same type helicopters be procured for the Air Force in order to coordinate testing and training. The development of cargo helicopters was recommended.

In his reply of 8 September 1947, Lt Gen J. Lawton Collins, Acting Chief of Staff, approved all requests with the provision

that a corresponding reduction would be made in expenditures for other types of Army aircraft. The rotary wing program was well on its way.

The H-13 underwent a series of modifications and continued to be a popular aircraft in the Army Aviation inventory. It was first flown in Korea at Ascom City in the winter of 1950.

The latest model (H-13K) was flown from Bell's Hurst, Texas plant to Fort Rucker, Ala., by Lt D. H. Olsen and SP-6 Richard C. Shelton on 11 February 1961. In testing this aircraft, Capt William H. Scanlan of the U. S. Army Aviation Board took it to an altitude of 20,000 feet.

Sikorsky's H-19 was first obtained early in 1952 and was used by the 6th Transportation Co. in Korea in December 1952. This was the first Army transportation company to support units in combat. During the last days of the Korean War, the H-19 afforded invaluable support in helping to halt a major breakthrough by transporting artillery ammunition to United Nations batteries.

Another of the larger helicopters in the Army Aviation inventory is Vertol's H-21 Shawnee. An Army H-21 nicknamed "Amblin Annie" was the first helicopter to fly nonstop coast to coast. It was flown by Maj Hubert D. Gaddis, Capt James Bowman and Mr. Joseph Givens. The flight stretched almost 3,000 miles and took about 30 hours. (See photo.) Recently Army H-21s have been used extensively in Vietnam to transport troops.

Hiller's H-23 was first obtained in 1950. It also saw service in the Korean War and has been used for topographic surveying. Today the H-23 is used primarily as a trainer at the Army Pri-



mary Helicopter School at Camp Wolters, Texas.

The H-34, built by Sikorsky, is considered by many today as the Army's most reliable helicopter. The first production model H-34 (No. 34475) was built for the Army in December 1954. In March 1962 it was assigned at Langley Field, Va.

The H-34 has been successfully armed with 4.5" and 2.75" rockets and with .50 caliber machineguns. (See photo.) Recently the H-34 was selected as one of the aircraft to be used by the newly organized 22d Special Warfare Aviation Detachment at Fort Bragg, N. C.

Sikorsky's H-37 Mojave is the largest helicopter currently in the Army inventory. Recently the Army began converting all of its H-37As to H-37Bs. The B model has a redesigned cabin door and cargo hatch and auto-

matic stabilization equipment. The first B model was accepted at the Sikorsky plant on 7 June 1961 and flown to Fort Rucker, Ala.

Lighter and smaller than the mighty Mojave is Bell's HU-1 Iroquois, the Army's first turbine-powered helicopter. It serves as a mobile command post for troop commanders, for medical evacuation, and as a launching platform for SS-11 guided missiles.

The HU-1A can operate from small helipads on mountaintops because of its great power in proportion to relatively low weight.

Final type user evaluation testing by the U. S. Army Aviation Board at Fort Rucker began for the HU-1B on 28 November 1960. The Transportation Aircraft Test Support Activity at Fort Rucker received its first



HU-1B aircraft for logistical evaluation on 15 April 1961.

In May of 1961 the first of the overseas-bound HU-1B aircraft were accepted at Bell's Hurst plant by the Army and flown to a shipping point. Crews were Maj William R. Schmidt and SP-4 Leroy Fairchilds; Capt James Nichols and SP-5 William Gilkey; Lt J. C. Rothwell and SP-5 Malcolm Leighton.

The D is the latest model in the evolution of the HU-1 series. It was first flown in prototype form on 16 August 1961 at the Hurst plant and formally accepted by the Army at Fort Worth, Texas, on 18 November 1961.

These events had been preceded by the announcement on 8 July 1960 of the award of a \$7 million contract for the further development of the HU-1 series.

As in the B model, the troop

commander flying in the HU-1D is in constant contact with both his command and the pilot. Improved seating arrangements and larger windows enhance visibility, enabling all passengers to see the ground. The larger doors speed debarkation.

On 15 September 1961 it was announced that the Army had awarded a \$491,000 contract to the manufacturer for further experimental research to bolster range and speed of the HU-1. Reports will be submitted to the Army in December 1962 and may result in production of another model.

The HC-1B Chinook evolved from an announcement made late in 1956 that Department of Army desired a new multi-turbine medium transport helicopter.

Industry was invited to submit design proposals for the aircraft in June of 1958. In Au-

gust and September of that year a competition was held at Wright Air Development Center, Wright-Patterson Air Force Base, Ohio. Results were submitted to Department of Army in October. Army approval of the findings and subsequent development program were announced in February 1959. On 4 March the Army announced that Vertol's design had been accepted and requested that a formal aircraft proposal be drawn. This proposal was submitted in April followed by award of the letter contract on 22 May.

The mockup inspection was held 27-29 January 1960 at Vertol's Morton, Pa., plant. The HC-1B was first officially flown at Philadelphia International Airport on 19 October 1961.

It is anticipated that the HC-1B will replace the H-37, H-34, and H-21 helicopters.



R-1—Platt-LePage two-place (pilot and one passenger). Observation. The Army Air Forces obtained only one R-1 in FY 1944 and one R-1A in FY 1945. The R-1 had a 440 hp Pratt and Whitney engine (R-985-21) and the R-1A had a 450 hp Pratt and Whitney engine (R-985-AN-1).

R-2—Kellett. The Army Air Forces obtained one of these two-place aircraft in FY 1940 for evaluation. It was a modification of the YG-1C autogiro, and had a 300 hp Jacobs engine (R-915-1).

No drawings available

R-3—Kellett. The Army Air Forces obtained one of these two-place aircraft in FY 1940 for evaluation. A modification of the YG-1B autogiro, it had a feathering rotor and a 225 hp Jacobs engine (R-755-3).

R-4—Sikorsky, two-place (pilot and one passenger). Observation, reconnaissance and medical evacuation.

Models ranged through XR-4C and were used by the Army Air Forces. All models had side-by-side seating.

Model	Total Obtained	FY First Obtained	Notes
XR-4	1	1942	This model featured an antitorque tail rotor. It had a 165 hp Warner engine (R-500-3).
YR-4A	3	1942	This model had 180 hp Warner engine (R-550-1).
YR-4B	27	1943	This model was equipped with racks for litters or bombs. Three were transferred to the Navy. It had a 180 hp Warner engine (R-550-1).



Notes

This model featured an antitorque tail rotor. It had a 165 hp Warner engine (R-500-3).
 This model had 180 hp Warner engine (R-550-1).
 This model was equipped with racks for litters or bombs. Three were transferred to the Navy. It had a 180 hp Warner engine (R-550-1).

Model	Total Obtained	FY First Obtained	Notes
R-4B	100	1944	This model had a range of 130 miles. Twenty were transferred to the Navy. It had a 200 hp Warner engine (R-550-3).
XR-4C	1	1943	This was a modified XR-4. It had a 180 hp Warner engine (R-550-1).

R-5—Sikorsky, two-place (pilot and one passenger). Observation.

Models range through YR-5D. These aircraft were used by the Army Air Forces. All models except the YR-5D had 450 hp Pratt and Whitney engines (R-985-AN-5). The D model had a 600 hp Pratt and Whitney engine (R-1340).



Model	Total Obtained	FY First Obtained	Notes
XR-5	5	1944	Tandem-rotor model of which two were later converted to XR-5A. Other models were all single rotor.
YR-5	0	—	This model was redesignated and completed as the YR-5A.
XR-5A	2	1944	Modified XR-5.
YR-5A	26	1944	Each aircraft equipped with two litters. Two transferred to the Navy.
R-5A	34	1945	All transferred to the Navy and the Coast Guard. Sixty-six had been ordered but the contract was cancelled.
R-5B	0	—	Contract cancelled.
YR-5C	0	—	Contract cancelled.
YR-5D	20	1946	YR-5A with more powerful engine.



R-6—Sikorsky, two-place (pilot and one passenger). Observation. Models range through R-6B. These aircraft were used by the Army Air Forces.

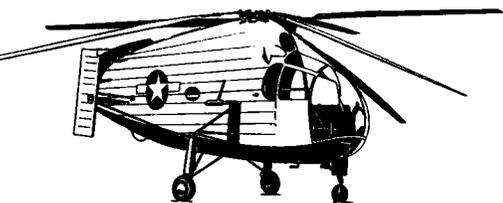
Model	Total Obtained	FY First Obtained	Notes
XR-6	1	1944	Side-by-side seating. 225 hp Lycoming engine (0-435-7).
XR-6A	5	1944	Same as XR-6 except for 240 hp Franklin engine (0-405-9). Three of these were transferred to the Navy.
YR-6A-NK	26	1944	Same as XR-6A except manufactured by Nash-Kelvinator.
R-6A-NK	193	1945	Nash production model. Thirty-six transferred to the Navy.
R-6B-NK	0	—	Cancelled.

R-7 — Sikorsky. This aircraft was ordered in FY 1943. It was intended to be a redesigned XR-6A but the contract was cancelled before it was manufactured.

No drawing available

XR-8 — Kellett, two-place (pilot and one passenger). Observation.

The Army Air Forces obtained one XR-8 and one XR-8A in FY 1945. The XR-8 had twin, side-by-side, three-bladed rotors and a 240 hp Franklin engine (0-405-9). The A model had twin, side-by-side, two-bladed rotors and a 240 hp Franklin engine (XO-405-9).



R-9 — G & A Aircraft, one-place. Observation. The Army Air Forces ordered the XR-9 and XR-9A in FY 1944, but delivery was never made. However, the AAF ordered and received one XR-9B in FY 1946.

The XR-9, commercially designated 45B, had one three-bladed rotor and a 126 hp Lycoming engine (XO-290-5). The

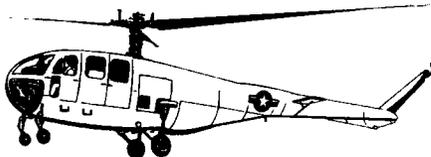
A model, commercially designated 45C, had one two-bladed rotor and the same engine as the XR-9. The B model, a revised 45C, had a 135 hp Lycoming engine (O-290-7).

R-10 — Kellett, eight-place (pilot, passenger and six litters). Ambulance. The Army Air Forces obtained two XR-10s after ordering them in FY 1945. Each

aircraft had twin intermeshing rotors and two 450 hp Pratt and Whitney engines (R-985-AN-5).

R-11 — Rotor-Craft, two-place (pilot and one passenger). Observation. The Army Air Forces obtained one XR-11 in FY 1946 for evaluation. The aircraft had two counterrotating, three-bladed rotors and a 100 hp Continental engine (A-100).

No drawings available of R-9, R-10, R-11.



R-12 — Bell, five-place (pilot and four passengers). Utility.

The Army Air Forces obtained 3 XR-12s and 10 YH-12Bs in FY 1948 (new designation given R models). These aircraft had 600 hp Pratt and Whitney engines (R-1340-55).

H-13 *Sioux* — Bell, two-place (pilot and one passenger with two external litters except for K model). Light observation aircraft. (Throughout 1948 type letter designations shifted from R to H and many models carried both designations. However, the H-13 seems to be the first model appropriately called H.)

The Army obtained its first YR-13 in December 1946 and by 30 June 1949, 14 R models were on the Army Aviation inventory. No more R models appear on the inventory after that. The YR-13 had a 175 hp Franklin engine (6-ALV-335).

H-13s used by the Army range from A through K, excluding F, I, and J.



Model	Most Ever Carried On AA Inventory	FY First Obtained	Notes
YH-13A	4 in December 50	1947	Previously designated YR-13.
YH-13C	1 in December 55	1950	Modified H-13B; used skid gears.
H-13B	59 in June 49	1949	Bell 47B; used wheeled gear and a 200 hp Franklin engine (O-335-3).
H-13C	22 in June 56	1952	Modified H-13B.
H-13D	73 in December 51	1951	Skid gear single controls and a 188 hp Franklin engine (O-335-5B).
H-13E	406 in December 53	1952	H-13D modified for side loads, same engine.
H-13G	229 in December 54	1953	Bell 47G; same engine as H-13D.
H-13H	368 in January 1962	1956	Bell 47G-2, 200 hp Lycoming engine (VO-435-23B).
H-13K	2 in January 62	1962	Three-place, with 220 hp Franklin engine (6VS-335 supercharged).

On 31 January 1962 the Army Aviation inventory carried 278 H-13Es; 184 Gs; 368 Hs and 2 Ks.

R-14 — G & A Aircraft. Observation. The Army Air Forces ordered three of these aircraft in FY 1946, but the contract was cancelled the same year before the aircraft were manufactured.

No drawing available.

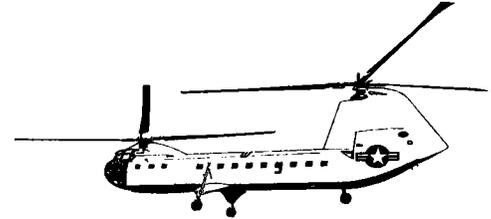


H-15 — Bell, four-place (pilot and three passengers). Utility.
 The Army Air Forces procured three XH-15s in FY 1950 for evaluation. Each aircraft used a 275 hp Continental engine (XO-470-5).

H-16 (H-27) — Vertol (Piasecki). Tandem rotors, heavy cargo.
 The Army Air Forces ordered two XH-16s in FY 1946. Originally XH-16 was to be 43-place and to use two 1,650 hp Pratt and Whitney engines (R-2180-11).

The YH-16A, obtained in FY 1955, was the second XH-16 produced. It was first redesignated as XH-27 and then YH-16A. It was 44-place and used two Allison engines (T-38-A3).

The YH-16B, obtained in FY 1955, was the first XH-16 produced. It was first redesignated as YH-16 with the same engines and personnel capacity. As the YH-16B, it had a personnel capacity of 50 (including crew) and used two 2,100 hp Allison engines (T-56-A-5).



No drawing available.

H-17 *Flying Crane* — Hughes (Kellett), three-place (crew of two and one engineer). The Air Force obtained one XH-17 in FY 1953 for evaluation as a flying crane. The Army received evaluation data on the XH-17 from the Air Force. The XH-17 originally was a Kellett project, but was sold to Hughes.

H-18A — Sikorsky, four-place (pilot and three passengers). Utility.
 The Army obtained four YH-18As for evaluation in FY 1950. Each aircraft had a 245 hp Franklin engine (O-425-1).



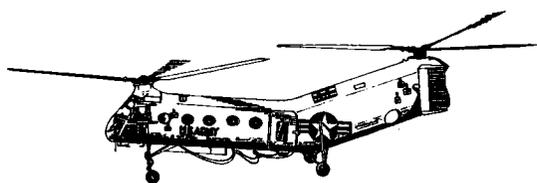
H-19 *Chickasaw* — Sikorsky, 12-place (crew of two plus 6 litters and one medical orderly, or 10 passengers). Light tactical transport. Models used by the Army range from A through D (excluding B).

Model	Most Ever Carried On AA Inventory	FY First Obtained	Notes
H-19A	1 in June 52	1952	Used 550 hp Pratt and Whitney engine (R-1340-57).
H-19C	72 in June 53	1953	Same engine as H-19A.
H-19D	240 in June 60	1954	Hydroclutch transmission; used 700 hp Wright (Lycoming) engine (R-1300-3).

As of 31 January 1962 the Army Aviation inventory carried 48 H-19Cs and 216 H-19Ds.

No drawing available.

H-20 *Little Henry* — McDonnell, one-place. Observation and reconnaissance. Two XH-20s were obtained by the Air Force in FY 1952 for evaluation.



H-21 *Shawnee* — Vertol, 22-place (crew of two and 20 passengers or crew of three and 12 litters). Light tactical transport.

The Army obtained its first H-21s in August 1954. The most H-21s ever carried on the Army Aviation inventory was 308 in December 1958. The Army also has 16 H-21Bs, which were acquired from the Air Force. Each H-21B and C has a 1,425 hp Wright engine (R-1820-103).

On 31 January 1962 the Army Aviation inventory carried 16 H-21Bs and 283 H-21Cs.

H-22 — Kaman, 2-place (pilot and passenger). Utility.

The Navy ordered one YH-22 for evaluation in FY 1950. It was commercially designated K-225 and had a 200 hp Lycoming engine (O-435-C).

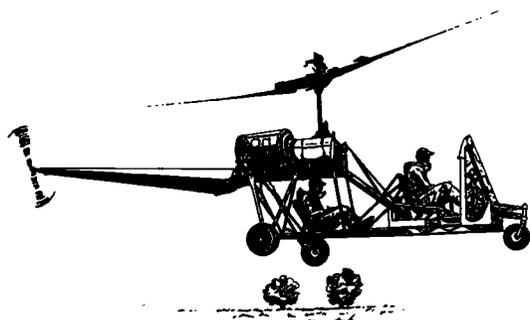
No drawing available.



H-23 *Raven* — Hiller. All models except F are three-place (pilot and two passengers or two external litters). Light observation aircraft. The Army obtained one YH-23 for evaluation in FY 1950. Models used by the Army range from A through F, excluding E.

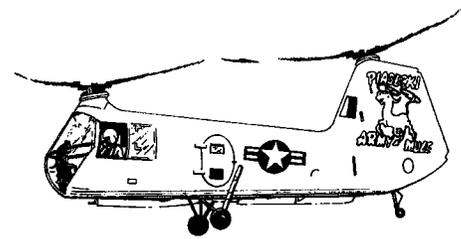
Model	Most Ever Carried On AA Inventory	FY First Obtained	Notes
H-23A	82 in December 52	1951	Used in Korean War. Commercially designated Hiller 360. Used 178 hp Aircooled Motors (Franklin) engine (O-335-4).
H-23B	273 in June 56	1952	Same as A except wheels added to skids. Used 200 hp Aircooled Motors (Franklin) engine (O-335-6).
H-23C	137 in December 57	1956	Commercially designated 12C; same engine as "B" model.
H-23D	309 in January 62	1956	Used 225 hp Lycoming engine (VO-435-23B).
H-23F	4 in January 62	1962	Four-place; commercially designated Hiller 12 E4. Obtained for U. S. Army use in Inter-American Geodetic Survey mapping operations in Latin America. Plans call for purchase of 17 H-23Fs. Uses 305 hp Lycoming engine (VO-540-A1B).

On 31 January 1962 the Army Aviation inventory carried 224 H-23Bs; 119 Cs; 309 Ds and 4 Fs.



H-24 — Seibel, two-place (pilot and one passenger). Observation and medical evacuation. The Army obtained two YH-24s for evaluation in FY 1951. Each had a 125 hp Lycoming engine (O-290-11).

H-25A Army Mule — Piasecki, (crew of two with three to six passengers). Utility. The Army obtained its first H-25A in FY 1953. The most ever carried on the Army Aviation inventory was 63 in June 1955. Each H-25A uses a 550 hp Continental engine (R-975-46).



H-26 — American Helicopter, single place. Observation and reconnaissance. The Army obtained two YH-26s for evaluation in FY 1952. Each used two 48 hp American Helicopter engines (XPJ49-AH-3).

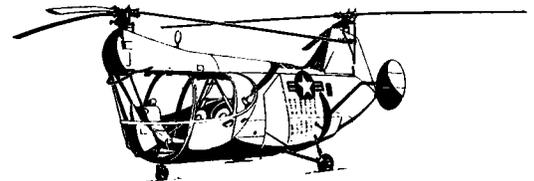
H-27 — See H-16.

H-28 — Hughes. This helicopter was designed as a revised version of the XH-17 but the contract was cancelled before any were manufactured.

H-29 — McDonnell. This helicopter was designed as a revised version of the XH-20 but the contract was cancelled before any were manufactured.

No drawings available of H-27, H-28, H-29.

H-30 — McCulloch, two-place (pilot and passenger). Observation, utility, and medical evacuation. The Army obtained two YH-30s for evaluation in FY 1952. Each used a 200 hp Franklin engine (O-335-5).



H-31 — Doman, pilot and three to seven passengers. Utility.

The Army obtained two YH-31s for evaluation in FY 1952. They were commercially designated LZ-5. Each used a 400 hp Lycoming engine (XO-580-1).

H-32 — Hiller, two-place (pilot and one passenger). The Army obtained six YH-32s for evaluation in FY 1954. They were commercially designated YHJ-1. Each used two 38 hp Hiller ram jet engines (B-69).



H-33 — See XV-3, Army Aviation Story, part V, next month. No drawing available.



H-34 Choctaw — Sikorsky, 20-place (pilot, copilot and 18 passengers or eight litters). Light tactical transport.

The Army obtained its first H-34s in FY 1955. The most H-34As ever carried on the Army Aviation inventory was 423 in December 1958, and the most Cs was 190 in January 1962. The H-34A and C uses a 1,425 hp Wright (Lycoming) engine (R-1820-84A).

On 31 January 1962 the Army Aviation inventory carried 179 H-34As and 190 H-34Cs. (All of the Army's H-34s are being converted to C models.)

H-35 — See XV-1.

No drawings available of H-35, H-36.

H-36 — This designation was reserved for Navy use but was later cancelled and never used.

H-37 *Mojave* — Sikorsky, 26-place (crew of three and 23 passengers, or 24 litters, or 6,000 pounds of cargo). Medium tactical transport.

The Army obtained its first H-37 in 1956. In 1961 it began converting its H-37As to B models. The most H-37As ever carried on the Army Aviation inventory was 90 in June 1960. Both models use two 1,900 hp Pratt and Whitney engines (R-2800-54).

On 31 January 1962 the Army Aviation inventory carried 55 H-37As and 35 H-37Bs.



No drawing available.

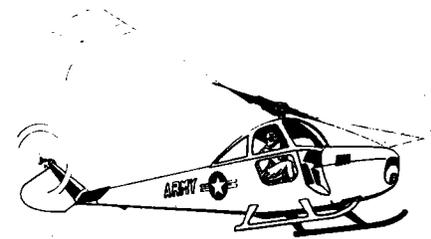
H-38 — This designation was reserved for Navy use, but later was cancelled and never used.



H-39 — Sikorsky, four-place (pilot and three passengers). Observation. The Army obtained one XH-39 for evaluation in FY 1954. It was the third YH-18A modified with a 400 hp XT-51-T3 Aertouste engine.

H-40 — See HU-1.

H-41 *Seneca* — Cessna, four-place (pilot and three passengers). Observation. The Army obtained ten YH-41s for evaluation in 1957. Each used a 270 hp Continental engine (FSO-526A).



H-42 — See HO-2.



HU-1 *Iroquois* — Bell (See models below for seating capacity). Light tactical transport. The Army obtained its first YH-40 (later designated HU-1) in FY 1956. Models range through D (excluding C).

Model	Most Ever Carried On AA Inventory	FY First Obtained	Notes
YH-40	6 in December 58	1956	Six-place; 770 hp Lycoming engine (XT-53-L-1).
HU-1	8 in December 59	1958	Redesignated from YH-40.
HU-1A	158 in January 62	1959	Six-place; 860 hp Lycoming engine (T-53-L-1-A).
HU-1B	94 in January 62	1960	Nine-place; 960 hp Lycoming engine (T-53-L-5).
HU-1D		1962	Thirteen-place; 1100 hp Lycoming engine (T-53-L-9).

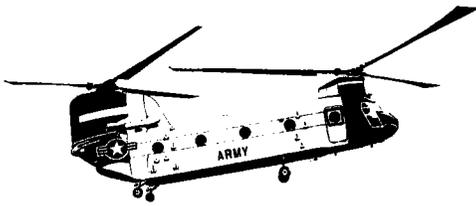
On 31 January 1962 the Army Aviation inventory carried 7 HU-1 aircraft (redesignated from YH-40).

HC-1A — Vertol, 23-place (crew of three and 20 passengers or 15 litters or 3,778 pounds of cargo). Cargo.

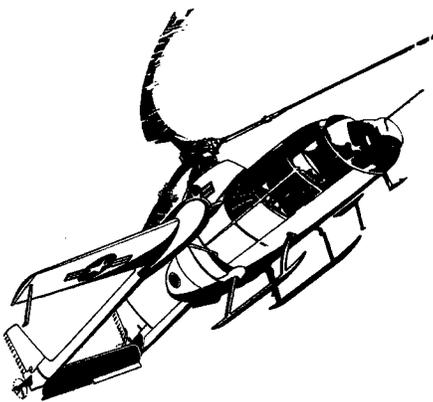
The Army obtained three YHC-1As for evaluation in 1959. They are commercially designated 107-2. Each used two 850 hp General Electric engines (T-58-GE-6).

HC-1B *Chinook* — Vertol, 36-place (pilot, copilot, crewchief and 33 passengers or 24 litters). Medium tactical transport.

The Army obtained its first YHC-1B in October 1961. Each aircraft uses two 2,200 hp Lycoming engines (T-55-L-5).



S-60 *Flying Crane* — Sikorsky. Pilot, copilot, 12,000-pound payload. Army leased the S-60 for 25 hours of familiarization flying in 1959. The S-60 was built around the engine and rotor system of the H-37.



XV-1 (L-25; H-35) — McDonnell, four-place convertiplane.

The Army obtained two XV-1 aircraft in FY 1954 for evaluation. Each used a 550 hp Continental engine (R-975-19).

Originally the XV-1 was designated XH-35 by the Army and XL-25 by the Air Force. The designation XV-1 was agreed upon as a compromise. Thus, this aircraft became the only one to hold three official designations.

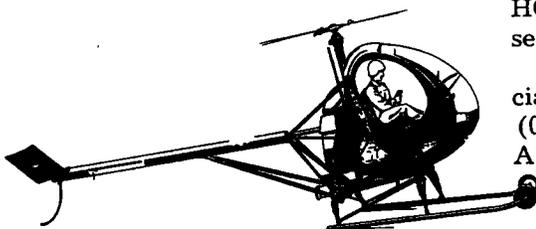
XV-2 — Sikorsky. Commercially designated S-57, this was to be a convertiplane with a retracting rotor. Some design studies were completed, but the aircraft was never built. No drawing available.

HO-1 *Djinn* — Sud, two place (pilot and one passenger). Observation and reconnaissance. The Army obtained three YHO-1s for evaluation. Each used a 240 hp Palouste IV, Compressed air, Turbomeca engine. This was the first aircraft to receive the Army's new observation designation.



HO-2 (YH-42) — Hughes, two-place (pilot and one passenger). Observation and reconnaissance.

The Army obtained five YHO-2s for evaluation. Each is commercially designated 269-A and each used a 180 hp Lycoming engine (O-360-C2B). This aircraft was originally designated YH-42 by the Air Force.



HO-3 — Brantley, two-place (pilot and one passenger, side by side). Observation and reconnaissance.

The Army obtained five YHO-3s for evaluation. Each is commercially designated B-2 and uses a 180 hp Lycoming engine (VO-360-A1A).

