

The One and Only

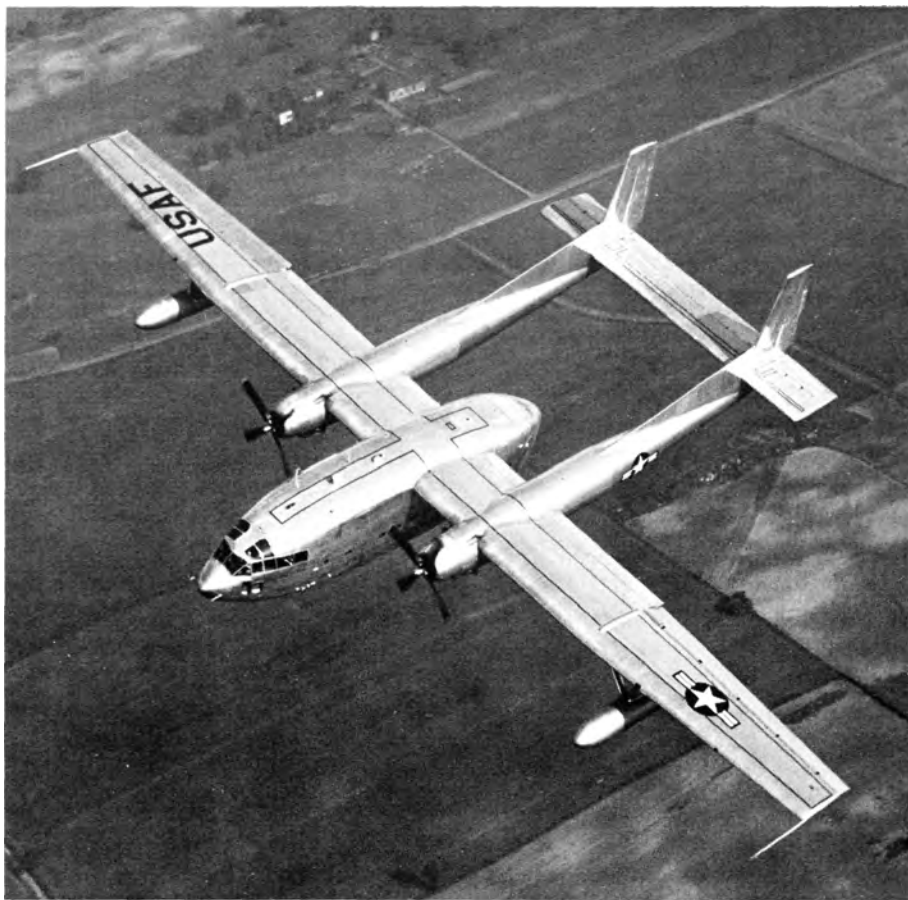
FAIRCHILD C-119H FLYING VAN

by Kent A. Mitchell

During the early 1950s, the U.S. Air Force expressed a need for a follow-on aircraft to replace the venerable Fairchild C-119 *Packet*, which was the advanced version of their C-82 *Flying Boxcar*. Service experience in Korea had revealed a rapid increase in operating gross weight with the accompanying decrease in performance of the C-119. Fairchild's response to the challenge was the design of the XC-119H, which was really a complete redesign of the C-119 with a new wing of greater span (148 feet versus 109 feet) which would provide 25 percent additional lift, larger vertical and horizontal tail surfaces, and powered by Wright "Turbo Compound" R-3350-30W engines with Aeroproducts propellers. Built under U.S. Air Force contract number W33-038 AC-19200, the aircraft ultimately cost \$4,057,551.03.

Dubbed the *Flying Van*, Fairchild's Model 160 first flew May 27, 1952¹ and displayed low stall and landing speeds, single-engine capabilities, long-range cruise, and the already known (for the time) large volume cargo-carrying abilities. The design maximum takeoff weight was 85,900 lbs.—the payload being 30,000 lbs. It was stated, however, the aircraft structure was capable of a gross weight in excess of 100,000 lbs. (The standard current production C-119G was grossed out at 74,400 lbs.) With the long wing, the "H" model demonstrated that it could take off at normal gross weight and clear a 50-ft. obstacle in 2,280 feet and land over the same obstacle in only 1,733 ft.! Other performance included an initial rate of climb (at normal rated power) of 772 ft. per minute, service ceiling 22,500 ft., high speed 263 mph at 15,000 ft., cruise at 187 at 10,000 ft., and a maximum range of 2,150 miles.

Other outstanding performance parameters of the aircraft were demonstrated before military representatives of the United Nations (only one month after its first flight) by Fairchild's Chief



View from above, showing the 148-foot wingspan.

(Fairchild Aircraft Photo 12-410)

Test Pilot Dick Henson, who performed *single engine* vertical banks and climbing turns in both directions.² The *New York Herald Tribune* reported, "In today's tests at the Municipal Airport . . . the Flying Van was flown through a series of difficult aerial maneuvers with one of its two 3,500-hp engines shut off, and then was piloted at speeds as low as seventy miles an hour."³

Credit for the new design was credited to Walter Tydon, then Chief Engineer of the Fairchild Aircraft Division at Hagerstown, Md. Whereas the production C-119 wing incorporated a NACA 2418 root profile and a NACA 4409 tip profile with a straight taper, the "H" model wing center section was an extended NACA 2416 constant chord straight panel which provided 40 percent more wing area. This configur-

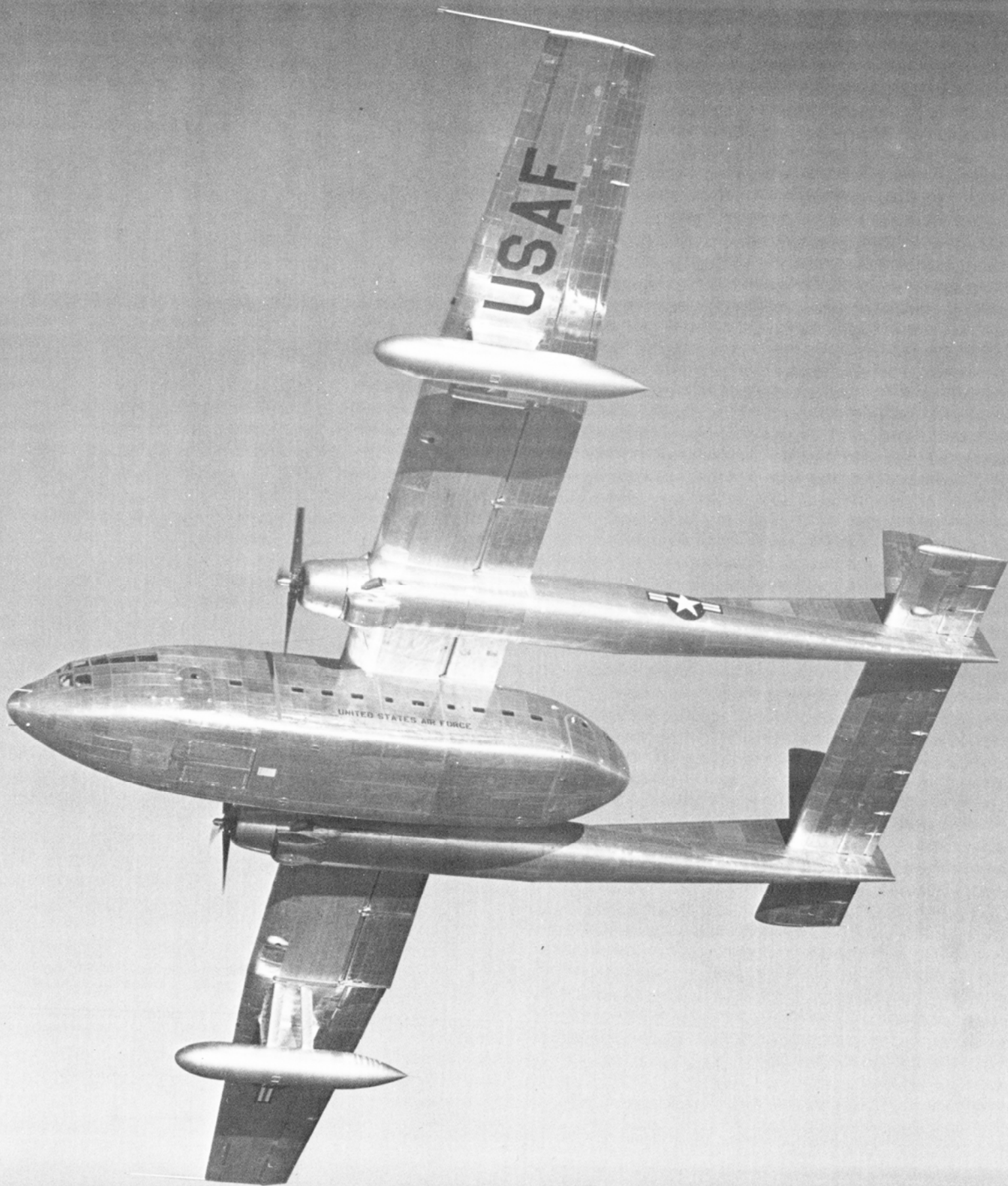
ation resulted in a high aspect ratio of 10.75 for the new wing, compared to 8.25 for the regular C-119.⁴

As seen in the photographs, as all aircraft designers know only too well, any one change in an aircraft's configuration requires mandatory compromises or trade-offs in other parts of the machine. Most noticed are the ailerons extending the entire length of the outer wing panels, the long tail booms, large dorsal fins, long horizontal stabilizer, and tall vertical fins.

One very unusual feature of this cargo aircraft design was the two large 4.5-foot-diameter, 1,700-gallon exter-

View from below, showing the high aspect ratio wing, long tail booms, large horizontal stabilizer, squared fuselage windows, and the 1,700-gallon external fuel tanks.

(Fairchild Aircraft Photo 12-396)





The Fairchild XC-119H, tail number 1258S.

(Fairchild Aircraft Photo 12-389)



Taking off, showing the high-lift slotted flaps.

(Fairchild Aircraft Photo 12-440)



High-speed, low-pass, jettisoning water ballast.

(Fairchild Aircraft Photo 12-498)

nal fuel tanks. All of the aircraft's fuel was contained in these two tanks. This configuration, by eliminating all of the usual internal tank connecting plumbing, valves, and numerous access doors, produced a weight saving of 835 lbs. In addition, during war-zone operations, the two fuel tanks actually presented less than half the exposure to gunfire than would a full span wing of fuel cells. Then, too, in the event of a crash, the fuel tanks would probably tear off first and thereby reduce the fire hazard to the crew.

Another innovative design feature was a three-piece engine cowling which folded up and down so as to completely expose the engine for ease of inspection and maintenance.

Fairchild's philosophy about the aircraft was expressed in its corporation magazine, *Pegasus*: "Although it bears the C-119 designation, it is essentially a new airplane to perform a wide range of missions. Simplification and safety have been engineered into the airplane to a degree we do not believe has ever before been equalled." Also, it is the first military aircraft to come along in a long time to be built for simplicity rather than complexity. . . .⁵

Fairchild and then the Air Force flight tests of the aircraft continued until April 1954. By that time, the Air Force had become interested in the new Lockheed design of a four-engine turboprop cargo plane known as the C-130A. Thus, the C-119H never saw production.

REFERENCES

1. *Yesterday—Today—Tomorrow, Fifty Years of Fairchild Aviation*, Fairchild Hiller Corp., 1970, p. 69.
2. *Aero Digest* magazine, Volume 65, No. 2, August 1952, p. 47.
3. "Flying Van for 64 Troops Tested as Successor to Aerial Box Car," Ansel E. Talbert, Aviation Editor, *New York Herald-Tribune*, June 28, 1952.
4. op. cit. *Aero Digest*, p. 44.
5. *The Pegasus*, Volume 19, No. 1, July 1952, Fairchild Engine and Airplane Corporation, Hagerstown, Md., p. 16.

ABOUT THE AUTHOR

Author Kent Mitchell's previous contributions to the *Journal* have been: "The Fairchild XNQ-1/T-31 Trainer" (Spring 1977); "The Saga of the Fairchild AT-21" (Fall 1987); and "The Tandem Landing Gear Martin XB-26H" (Spring 1988).

FAIRCHILD C-119H

YAWMETER HEAD (TEST)
1700-GAL. FUEL TANK
WRIGHT R-3350-85 TURBO COMPOUND ENGINE
ELECTRICAL JUNCTION BOXES
FORWARD BULKHEAD
RADIO EQUIPMENT
ASTRODOME
NAVIGATOR SEAT
RADIO OPERATOR SEAT
COPILOT SEAT
PILOT SEAT
WINDSHIELD WIPER
CONTROL COLUMN
INSTRUMENT PANEL
RUDDER PEDALS
FORWARD HEATER OUTLETS
AIRSPEED PITOT HEADS

FLIGHT DECK HEATING
FLIGHT ENGINEER SEAT
FORWARD ESCAPE HATCH
FLIGHT DECK ACCESS
ELECTRICAL EQUIPMENT
FORWARD ENTRANCE DOOR
AUXILIARY POWER UNIT
CARGO TIEDOWN FITTINGS
PARATROOPER SEAT
CABIN COMBUSTION HEATER
FRESH AIR INLET
CABIN HEAT DISTRIBUTION DUCTING

WRIGHT TURBO COMPOUND
AUXILIARY GAS TURBINE
ENGINE MOUNT
FIRE WALL
OIL TANK
HEATER AIR INLET
COMBUSTION HEATER
HOT WING DEICER DUCT
SPRING TAB
1700-GAL. FUEL TANK
TRIM TAB
YAWMETER HEAD (TEST)

ELEVATOR TRIM TAB
ELEVATOR SPRING TAB
RUDDER TRIM TAB
RUDDER SPRING TAB
STABILITY BALANCE TAB
BOOM STRUCTURE
REAR ENTRANCE DOOR
AILERON CONTROL CRANK
AILERON AUTOPILOT SERVO

AERO DIGEST CUTAWAY



Quarter-view, showing the tall vertical stabilizers.

(Fairchild Aircraft Photo 12-448)