

The One and Only

FAIRCHILD XC-120 PACK PLANE

by Kent A. Mitchell

During the late 1940s, flush with the success of the Fairchild C-82 and C-119 aircraft, the U.S. Air Force reasoned that the ultimate cargo aircraft would be one that could be operated in the manner of a tractor-trailer, i.e., a detachable cargo pod configured for various uses. This concept was deemed desirable because, while the C-82/C-119 aircraft had proved able to airlift large and heavy cargo over long distances, the speed of the airplane was wasted by the time-consuming job of unloading the payload onto the ground or awaiting trucks.

When approached by the military for a design, Armand J. Thieblot, chief engineer of the Fairchild Aircraft Division, envisioned a version of the C-119 in which a section of the fuselage aft of the "command bridge" could be uncoupled and towed away.¹ This design is shown in Mr. Thieblot's U.S. patent drawings.² "However, the military

thinkers had another question they had to pose in the same airplane—the effectiveness of having a pod that could be entered at either end. There are some advantages of this kind of cargo hold; items like telegraph poles that are longer than the pod proper could be hauled by air, with both ends protruding from the nacelle. However, this single advantage demands the complex four-wheel landing gear systems the mechanics and geometry of which are complex and the operational maintenance of which is apt to be troublesome."³ So, since the customer is always right, design work was started during April 1948 as Fairchild Model 107 under U.S. Air Force contract W33-038 AC-19200 and AF 33(038)-28084 which called for the completion of one experimental aircraft.

Mr. Thieblot's basic design for such an aircraft is reflected in his drawings accompanying a patent application filed August 4, 1948, and which was

granted March 7, 1950.⁴ It is curious to note that this design was patented prior to Mr. Thieblot's first and preferred concept, the C-119 derivative. Apparently, even though the Air Force was not interested in that design, as an afterthought Thieblot had the concept patented.

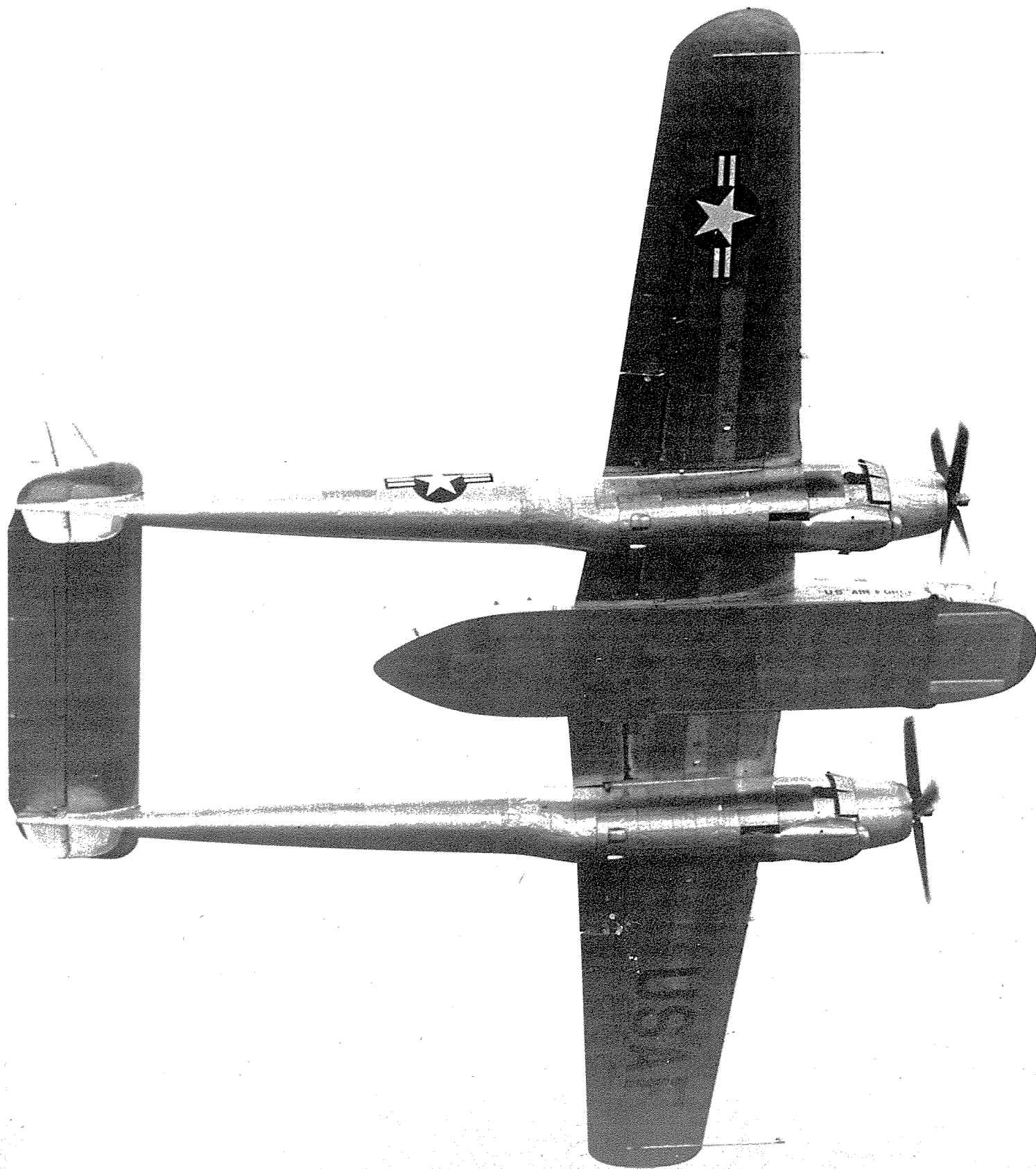
As expected by all parties concerned, the major engineering problems building the aircraft were with the landing gear. Because the Air Force wanted a cargo pod that could be towed into place from either end, or loaded from either end, the plane had to have a quadricycle gear. The main gear was conventional dual wheel assemblies, but extending out under the engines were two long outrigger dual wheel assemblies. All of this had to be tucked into the nacelle/tail booms during

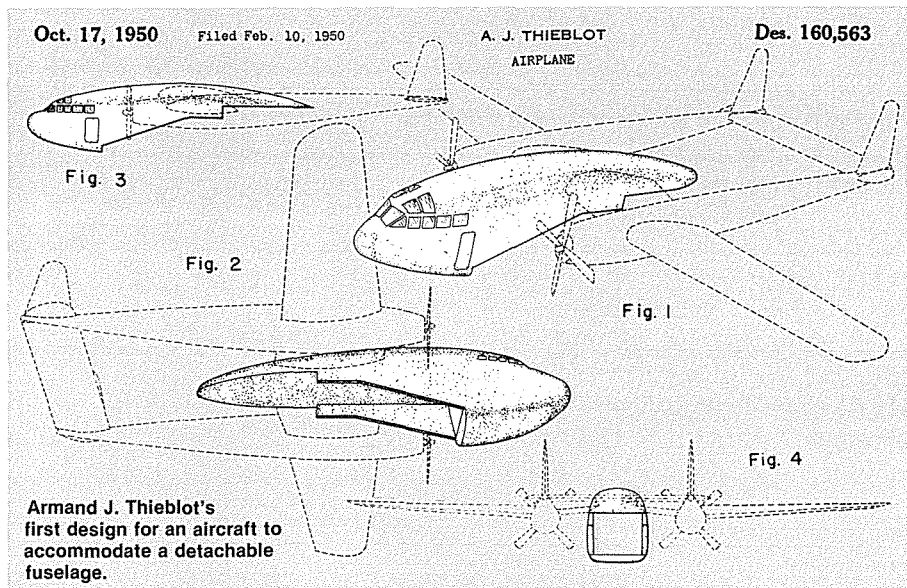
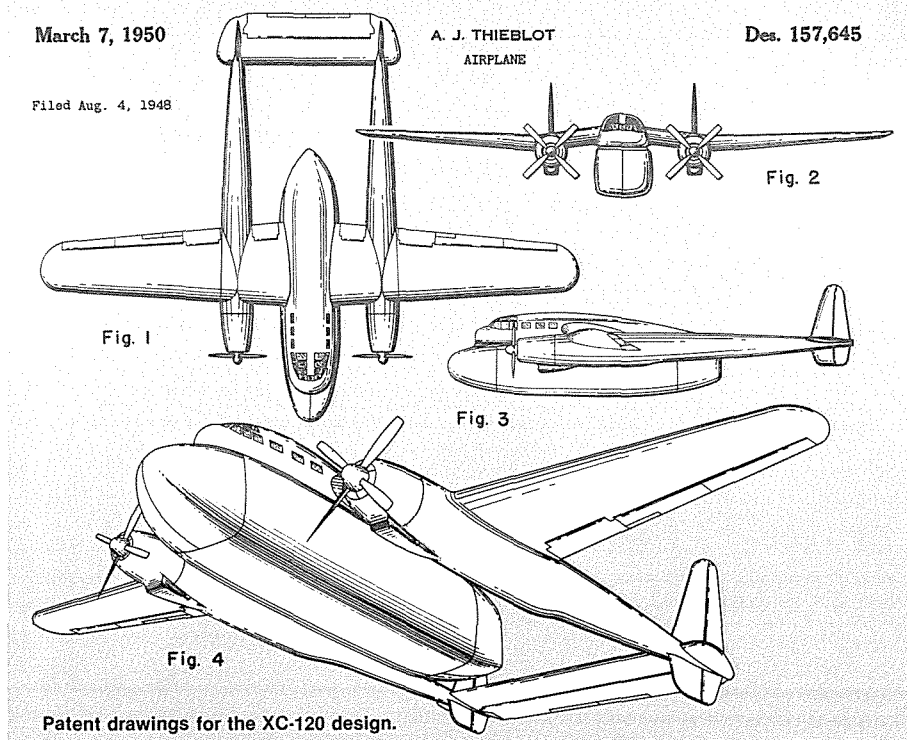
Peeling off, showing the aircraft's underside.
(Fairchild Aircraft Photo No. 8-792)



Lift off! First flight of the Pack Plane, AF Tail No. 48-330.

(Fairchild Aircraft Photo No. 8-757)





Towing the cargo pod clear of the XC-120.

(Fairchild Aircraft Photo No. 8-726)

flight. At the time, many felt that this complicated gear made the whole concept more trouble than it was worth.⁵

The completed aircraft was rolled out of the factory door at Hagerstown, MD, in June 1950.⁶ Listed specifications were a wingspan of 109 ft. 3¼ in., length 83 ft., height 24 ft. 10½ in., empty weight 44,000 lbs., normal gross weight 64,000 lbs., and a maximum gross weight of 74,000 lbs. Power was provided by two Pratt & Whitney R-4360-20 *Wasp Major* engines, rated at 3,250 hp for takeoff, swinging 15 ft. diameter Hamilton-Standard propellers. Maximum speed at sea level was given as 250 mph with a combat radius of 1,152 miles. Dimensions for the cargo pod were given as 36 ft. 9 in. long, 8 ft. high, 9 ft. 2 in. wide, with a volume of 2,700 cu. ft.⁷

The pod was designed to carry 20,000 lbs. of cargo. The pod fuselage itself had four small detachable dual-wheel assemblies to permit it to be towed to and from the airplane. For flight, the pod wheel assemblies were removed and stowed inside. The pod was held to the plane by four ball-and-socket assemblies, the balls on the top of the pod and the sockets on the bottom of the aircraft. Four electrically powered drum hoists in the aircraft attached flat-woven steel cables to recessed hooks on the four corners of the pod to raise and lower it to and from the ball-socket connections. When mated, a pneumatically inflated rubber tube on the pod sealed the gap between the plane and pod around its entire periphery.⁸

Within the military, one of the biggest advocates of the pod concept was Major General James M. Gavin, wartime commander of the 82nd Airborne Division and senior Army member of the Department of Defense weapons systems evaluation group. He envisioned dropping the whole pod by parachute—or even doing away with the parachute and skidding the pod in! He said, “. . . we did it with gliders. A pod costs less than a glider and needs no pilot.” Besides pods loaded with troops or miscellaneous cargo, others foresaw complete, ready-to-use, Ground-Controlled Approach (GCA) units, communications stations, field

hospital units, fuel tanks, and even droppable boats for the air rescue service.⁹

The first flight of the XC-120 took place at 12:15 P.M., August 11, 1950. (The author, then 14 years old, rode his bicycle to the airport and was a witness to the event.) The cargo pod was attached for the flight, which lasted 45 minutes. Piloting the aircraft were Richard A. Henson, Fairchild chief test pilot, and E.R. "Dutch" Gelvin, assistant chief test pilot. Others in the crew were Dan W. Weller, flight test engineer, Roy W. Carter, crew chief, and James R. Keller, electrician. Upon landing, Henson said, "The test was satisfactory in every way. The plane handles much like the C-119 Fairchild *Packet* in the air."¹⁰

Several more flights were made with the pod attached before the first flight without it. No problems were noted in that configuration. Then, on August 31, only 20 days and nine flight hours after its first test flight, Fairchild hosted 100 press and military visitors for photo taking sessions and flight demonstrations. Among the military visitors was General Gavin who commented that the XC-120 was, "... the most significant development ever produced by the American aircraft industry." And, "As a piece of hardware, this airplane represents the most revolutionary development in warfare in years."

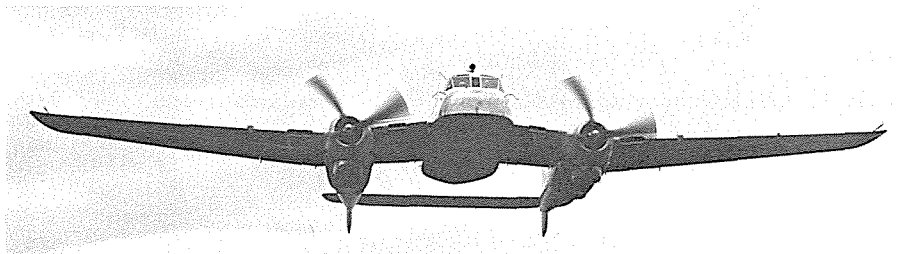
After the usual briefings and sales pitch, the flight portion of the program commenced (which is what everybody came for). Fairchild's flight crew did not disappoint the crowd. With the cargo pod attached, pilot Dick Henson taxied to the end of runway 27, ran the engines up to full power, released the brakes, and hauled the big plane off the ground in only 800 feet! Climbing out at a steep angle, the XC-120 circled the field for altitude, just above stalling speed, then nosed over and made a high-speed pass at 40 feet down the runway. Pulling up into a tight climbing turn, Henson extended the gear, dropped the flaps and made a short-field landing. Taxiing to the Fairchild ramp, the airplane was met by a ground crew who quickly attached the cargo pod ground handling wheels, lowered the pod, and towed it away.



In-flight view of the XC-120. Note that the forward landing gear door needs some adjustment—it does not appear to be completely closed. (Fairchild Aircraft Photo No. 8-688)

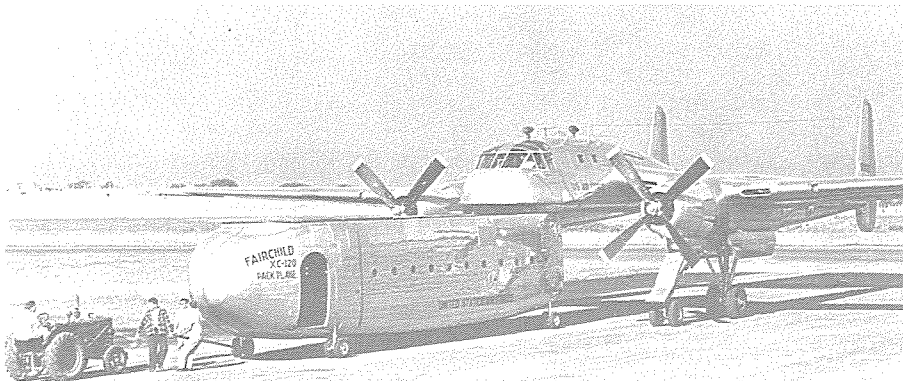


Fairchild flight test crew, left to right: Jim Keller, electrician; "Dutch" Gelvin, copilot; Dick Henson, pilot; Roy Carter, crew chief; and Dan Weller, flight test engineer. (Photo by Lyle S. Mitchell)



High speed low pass for the photographers.

(Photo by Lyle S. Mitchell)
(Fairchild Aircraft Photo No. 8-793)



Removing the cargo pod. Author's father Lyle S. Mitchell is foreman in plaid shirt. (Photo No. 8-708)



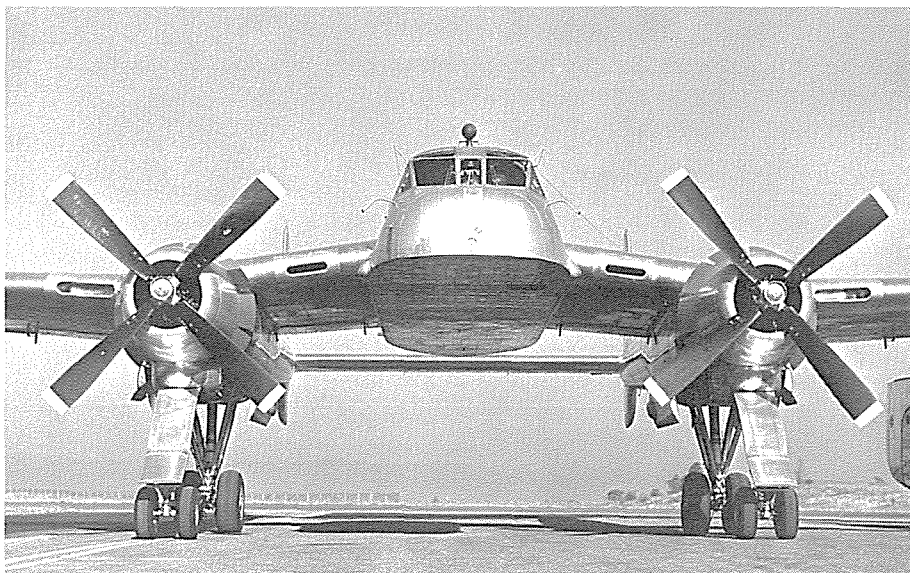
First flight of the XC-120 without the cargo pod.

(Fairchild Aircraft Photo No. 8-801)



The gangly quadricycle landing gear has been neatly retracted in this aerial shot.

(Fairchild Aircraft Photo No. 8-794)



One newspaper reporter dubbed this airplane the "flying flatiron." (Fairchild Aircraft Photo No. 8-733)

Returning to the runway, Henson repeated the demonstration, only this time minus the cargo pod. The aircraft was airborne in only 500 feet and the final buzz job was at 25 feet above the runway. Everyone was happy with the day's demonstration, especially the performance of the plane's quadricycle gear.¹¹ One reporter, on the front page of the *Washington Sunday Star*, waggishly said, "With freight 'pod' attached, it resembles an overfed P-38. Without the pod, and rolling along on revolutionary landing gear, it looks like an airborne catamaran."¹² Other newsmen dubbed the XC-120 without its cargo pod as the "flying flatiron."¹³

Another unusual feature of the *Pack Plane* design was made necessary by the height of the flight deck—approximately 15 feet when the cargo pod was removed. To provide crew access, Fairchild engineering designed a folding ladder which would extend to 15 feet (and collapse to a size small enough to be stowed under the navigator's table). When extended to the hatch on the under surface of the flight deck, two knobs at the end of the ladder engaged two keyhole slots. Strategically placed slots at other locations on the airplane allowed the ladder to be used for inspection/servicing the vertical fins, rudders, tail booms, engine oil tanks, and the windshield.¹⁴

Although the "tractor-trailer" concept of the detachable cargo pod had now been demonstrated—the pod in reality was still an airplane fuselage. While it *could* be towed away from the airplane, it really was not suitable for highway travel. The large clamshell doors at either end, streamlined to reduce aerodynamic drag when airborne, were not needed on the ground and made the pod too long and unmaneuverable. Then, too, the ground handling wheels were attached to simple struts hard-mounted to the pod, i.e., no springs or shock absorbers. Another design was needed.

Fairchild engineer Walter Tydon responded to the challenge by producing a cargo container design with a rectangular boxlike body with doors at either end whose horizontal swinging width of each half was approximately equal to the width of the body. When the un-

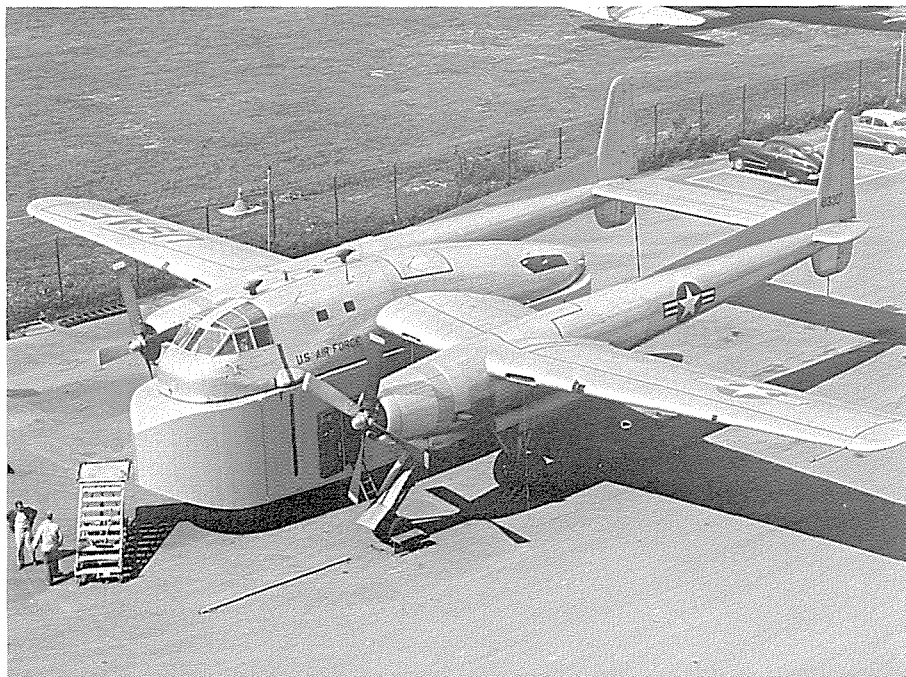
hinged vertical edges of the two doors were mated they formed a V-shaped "streamlined" projection from the cargo pod body for flight. However, if folded sequentially, one upon the other—like the flaps of a cereal box, the doors formed essentially flat ends on the vehicle body for on-the-road travel. Such a design allowed, for example, a 43-foot-long flight configured container to be reduced to 32 feet for the road. Wheel sets were designed with built-in spring and shock absorbers. The front wheels were steerable using a tow bar, or could be omitted and the front end of the body fitted to a dolly truck via a saddle and king pin arrangement.¹⁵

After 20 hours of flight tests by Fairchild pilots, which constituted Phase I of the aircraft's test program, the XC-120 was turned over to the Air Force for Phase II testing at the Air Materiel Command's Wright-Patterson Air Force Base at Dayton, Ohio. Acceptance by the Air Force closed out Fairchild's contract for building the airplane, for which they had received \$3,957,878.56. At Wright-Patterson the military verified the aircraft's flight characteristics against Fairchild's design parameters and limits. Those tests also proved that the plane could get into relatively small fields with a heavy load, detach the cargo pod quickly, and fly off for another load. Demonstration flights were made at Army and Air Force bases around the country where military commanders expressed enthusiasm about the cargo pod concept. Then the plane was flown to the Air Proving Ground at Eglin Air Force Base, Florida, for continued testing.¹⁶

Being a strictly experimental airplane, the XC-120 was never slated for production. As it was, the airplane was complicated—as was intended—to answer as many questions as possible. All test objectives being met, the project was considered completed in November 1952, and the *Pack Plane* joined the ranks of the "one-of-a-kind, never-heard-of-again" airplanes. ■

REFERENCES

1. Armand J. Thieblot, "Packplane Design Concept," *The Pegasus* magazine, Volume 16, No. 1, July



Another cargo pod design—squared-off and constructed of magnesium.

(Fairchild Aircraft Photo No. 13-188, Harold G. Martin Collection)

"Dutch" Gelvin climbs the 15-foot collapsible ladder to the flight deck.

(Photo by Lyle S. Mitchell)

1950, p. 5 (published monthly by Fairchild Engine and Airplane Corp.).

2. United States Patent Office, Des. 160,563, Airplane, Armand J. Thieblot, Hagerstown, Md., assignor to Fairchild Engine and Airplane Corp., patented Oct. 17, 1950.

3. *Op. cit.*, "Packplane Design Concept," Armand J. Thieblot.

4. United States Patent Office, Des. 157,645, Airplane, Armand J. Thieblot, Hagerstown, Md., assignor to Fairchild Engine and Airplane Corp., patented March 7, 1950.

5. John F. Loosbrock, "Pack Plane Drops Complete Combat HQ," *Popular Science Monthly*, Volume 157, No. 5, November 1950, pp. 98-103.

6. "Fairchild 'Pack Plane' Unveiled," *FAD* magazine (Fairchild Aircraft Division monthly publication for employees), Volume VIII, No. 6, June 30, 1950, pp. 3, 4.

7. *Aero Digest* magazine, March 1952, p. 29.

8. *Op. cit.*, "Fairchild 'Pack Plane' Unveiled," *FAD*.

9. *Op. cit.*, "Pack Plane Drops Complete Combat HQ," John F. Loosbrock.

10. "XC-120 . . . first flight," *FAD* magazine, Volume VIII, No. 8, August 31, 1950, p. 3.

11. "The Military & Press Meet the Packplane," *FAD* magazine, Volume VIII, No. 9, Sept. 29, 1950, p. 7.

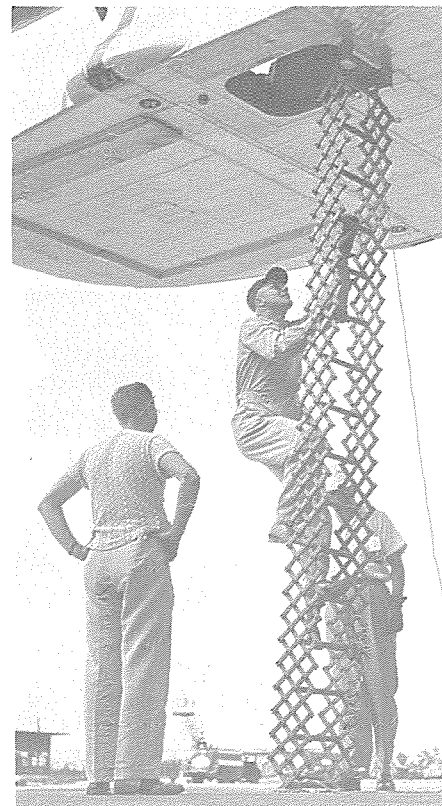
12. "Flying Trailer-Truck' Makes Its Aerial Debut at Hagerstown," Charles J. Yarbrough, Star Staff Correspondent, *The Sunday Star*, Washington, D.C., Sept. 3, 1950, front page.

13. Blurp for the front cover, *The Pegasus* magazine, Volume 16, No. 3, Sept. 1950, p. 16.

14. "The Long and the Short of It: Unique New Collapsible Ladder Gives Easy Access to Fairchild XC-120 Packplane," *FAD* magazine, Volume VIII, No. 10, October 27, 1950, p. 6.

15. Notes from U.S. Patent Office Application, Serial No. 364,026, Cargo Vehicle Body with Foldable Doors for Imparting a Streamlined Shape to the Body, Walter Tydon, June 25, 1953.

16. "XC-120 Completes Test Phase," *FAD* magazine, Volume IX, No. 4, May 31, 1951, p. 7.



ABOUT THE AUTHOR

Author Kent Mitchell has been an AAHS member since 1965. After overcoming an initial shyness about submitting a manuscript, he has had several articles appear in the *Journal*: "The Fairchild XNQ-1/T-31 Trainer" (Spring 1977); "The Saga of the Fairchild AT-21" (Fall 1987); "The Tandem Landing Gear Martin XB-26H" (Spring 1988); and "The One and Only Fairchild C-119H Flying Van" (Spring 1989). A private pilot, Mitchell is also a member of the Aircraft Owners & Pilots Association, the Silver Wings Fraternity, and recently has served as the Vice Chairman of the Washington County (Maryland) Regional Airport Commission.