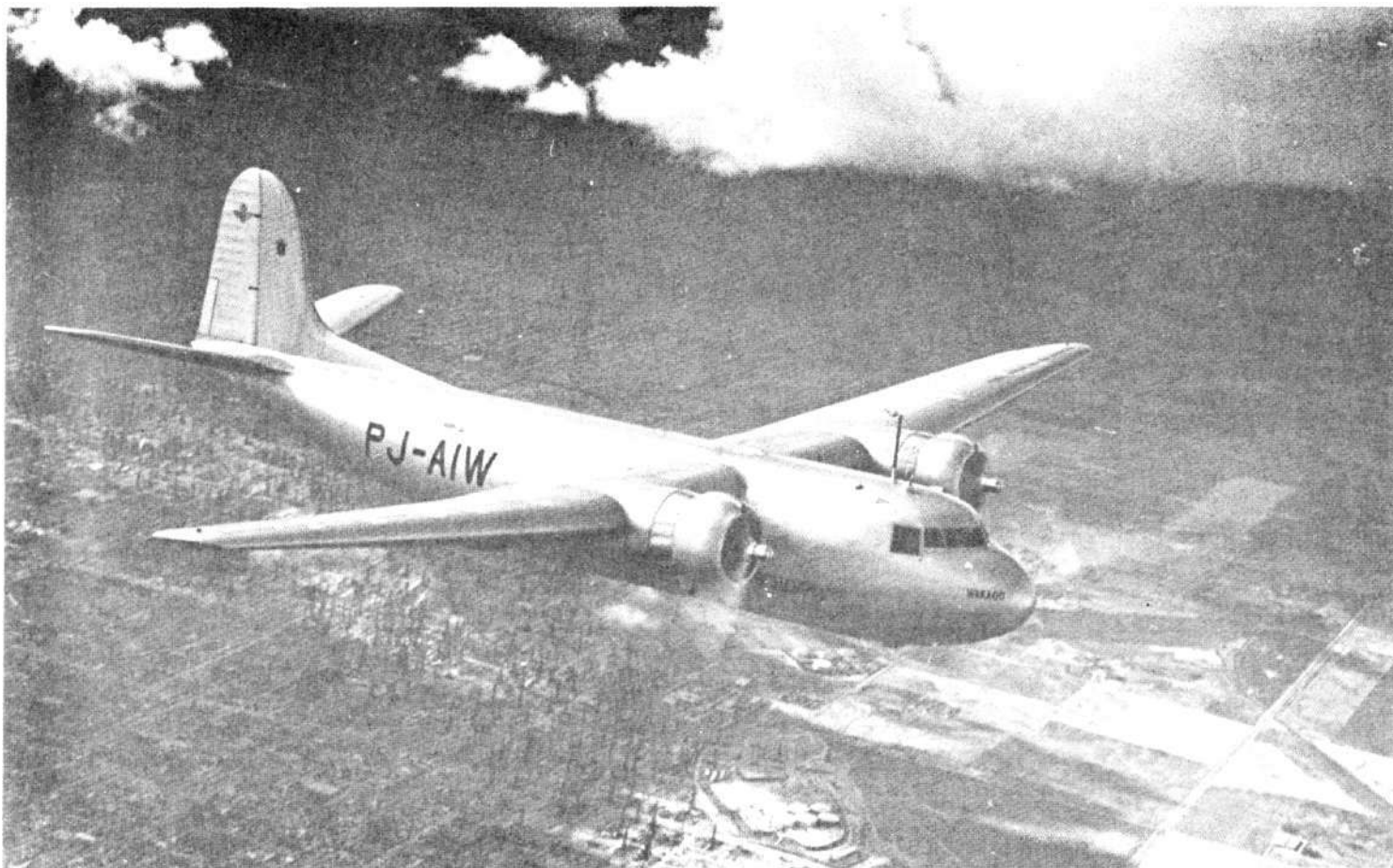




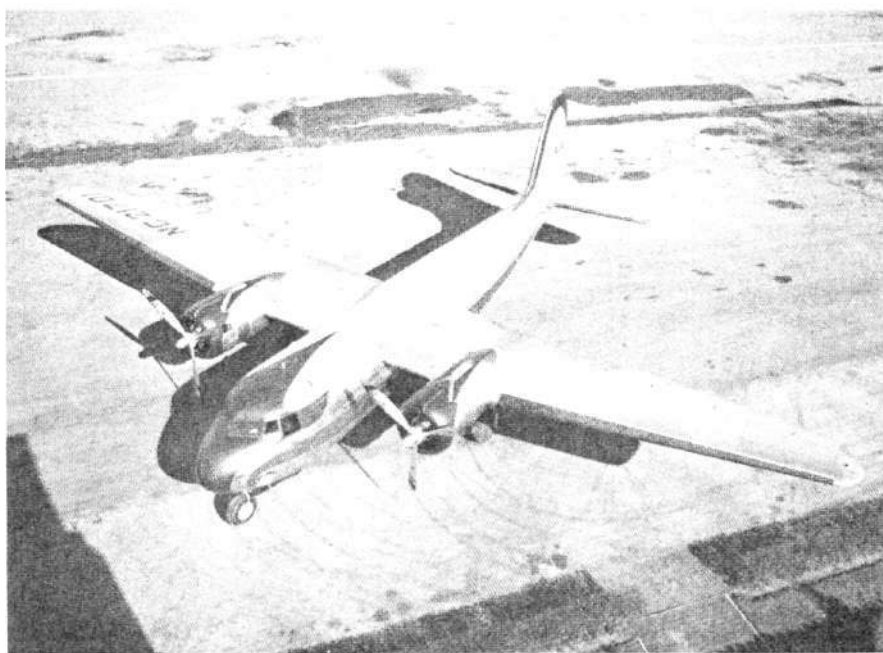
DC-5: The Forgotten Douglas

by Henry M. Holden

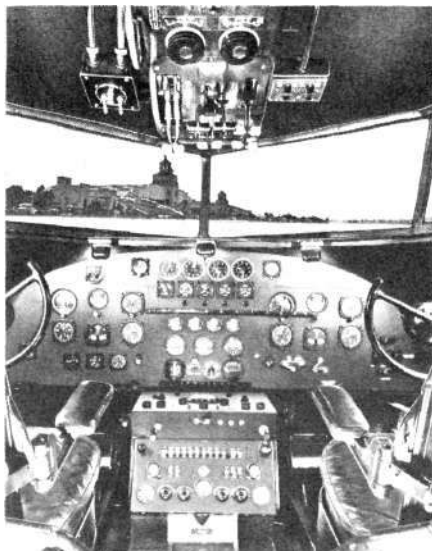
In the history of American aviation development, one name stands out. In the '30s and '40s it became a household word, synonymous with safe, efficient and dependable aircraft: Douglas. That name became the most well-known and respected name in worldwide aviation.

In the '30s and '40s, the Douglas DC-3 and the military version, the C-47, was the major piece of equipment of every United States and most foreign airlines. In the '50s, it was the DC-4, DC-6 and the DC-7. In the '60s, '70s, and on into the '80s, it was the DC-8, DC-9 and DC-10.

Most aircraft Douglas built were well-known successful designs. But not all. World War II was to decide the fate of the little-known and seldom-mentioned DC-5. This aircraft, which holds an almost anonymous place in history, was no less a performer than the rest of the Douglas line. The DC-5 is the only Douglas aircraft to lack the distinction and glamorous history that has been bestowed on the other Douglas aircraft. That's because it appeared at a



This high angle view of the prototype DC-5 at Mines Field, Los Angeles, shows its graceful lines. Note over-wing exhaust stacks. (McDonnell Douglas Corporation)



Cockpit arrangement of the DC-5 with excellent pilot's view on the ground. Throttles are overhead. (McDonnell Douglas Corporation)

time when proven performance was essential to America's survival.

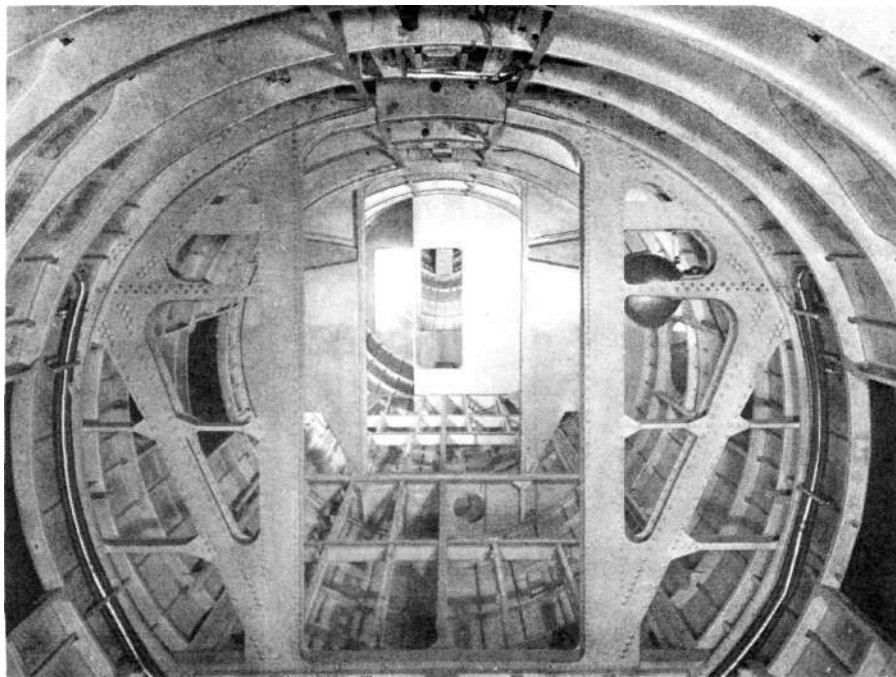
When the first DC-5 rolled off the production line on Feb. 15, 1939, it was seen as a radical departure for Douglas. It was the first high-wing design plane to come off its assembly line. It also employed the newly developed tricycle landing gear. It was fat and dumpy, looking like a chubby Aero-Commander, but still streamlined in its appearance.

Like all Douglas aircraft, the DC-5 was created for a specific need. In the '30s, as the American airline industry continued to grow, the need for short, medium and long-range aircraft became apparent.

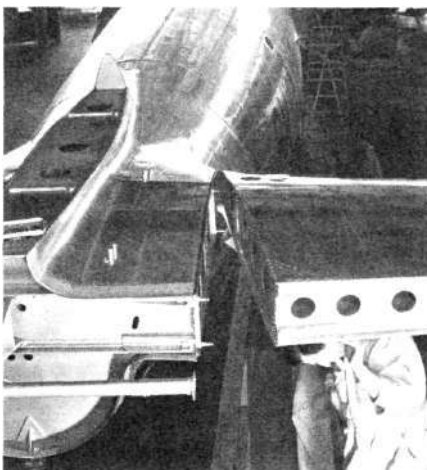
The medium-range routes were covered by the DC-2 and DC-3 and the long-range transcontinental routes were to be covered by the DC-4, which was under development. To fulfill the need for a short-range aircraft for feeder routes, Douglas designed the twin-engine, 16- to 22-passenger transport capable of operating in and out of small airports with a minimum of support equipment and personnel. In fact, many parts of the DC-5 were interchangeable with the DC-3.

The design of the DC-5, although a departure from what the public was used to seeing, incorporated many state-of-the-art features advanced for the day. Flexible interior arrangements were offered to fulfill all the airline requirements. The basic design called for two rows of two seats each in 16, 17, 18, and 22-passenger models. There was also a 14-passenger sleeper version and a club model which included two divans. The most versatile arrangement offered was a convertible cargo model with reinforced floor panels equipped with tie-down rings and sockets for 16 seats. Douglas offered a choice of Wright *Cyclone* air-cooled radials or Pratt & Whitney twin *Wasps*.

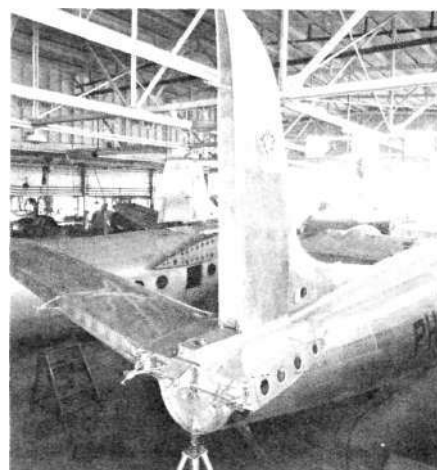
While the wing appeared to be the stand-



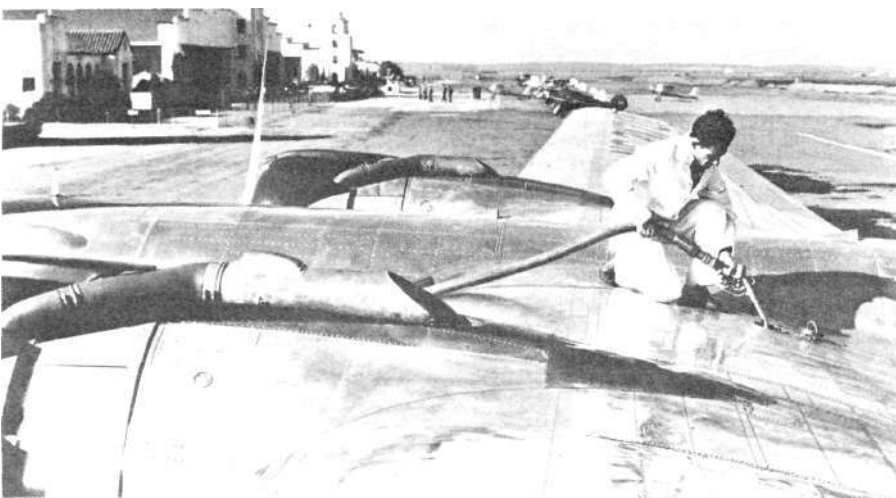
Looking aft inside the fuselage, the heavy bridge structures that supported the wings is visible in the foreground. (McDonnell Douglas Corporation)



Horizontal stabilizer is being installed on PH-AXE. It was later modified by adding 15-degree dihedral and a dorsal fillet before leaving the factory. (McDonnell Douglas Corporation)



DC-5 assembly area at El Segundo—the horizontal and vertical stabilizers are being installed on the KLM aircraft in the foreground. (McDonnell Douglas Corporation)



The method of refueling the DC-5 was typical for the period. Gasoline was pumped directly into the fuel tanks from atop the wing. Note the early exhaust system. (McDonnell Douglas Corporation)



NX-21701 was the Douglas prototype. Shown here in early flight tests. This aircraft was purchased by William Boeing, Douglas's chief rival. (McDonnell Douglas Corporation)

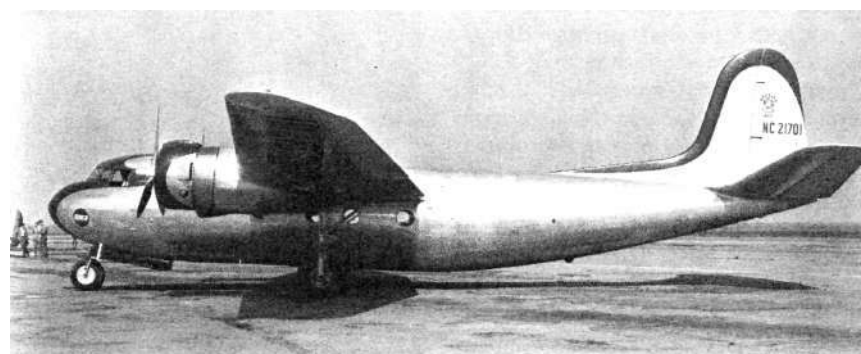
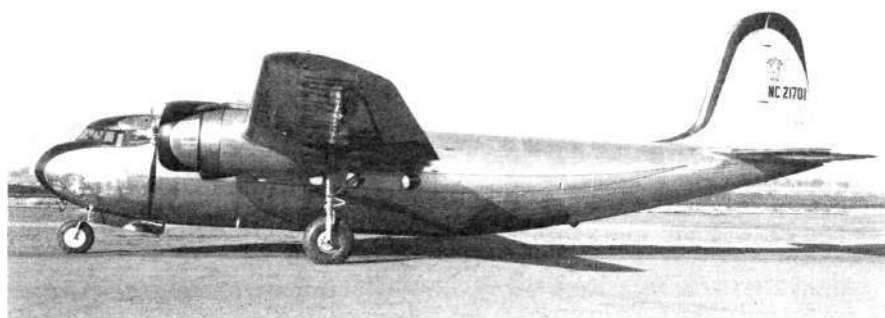
ard metal type, it had some unique engineering features. The high wing with full-span ailerons and flaps with outboard wing slots produced nearly perfect short takeoff or landing (STOL) performance. In addition, the center wing joined the fuselage and the engine nacelles as a single unit and housed the main landing gear.

Perhaps the most unique engineering feature of the DC-5 was the tricycle landing gear. One of the first to be installed on a commercial aircraft, it provided a greater margin of safety when operating in and out of small airports. It provided greater positive traction with the ground, for better braking and shorter rollouts. It also made the floor level with and closer to the ground for passenger comfort. This arrangement also made loading and unloading of passengers and cargo easier. The nose gear also retracted aft and into a well which was covered by doors, to reduce drag.

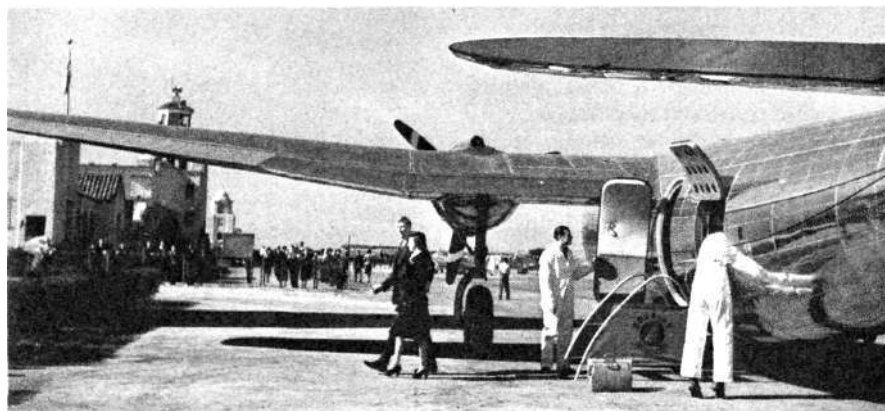
The first flight of the prototype DC-5 (NX 21701) took place on Feb. 20, 1939, and not long afterward, orders were placed for 12 aircraft. Pennsylvania Central Airlines ordered six; SCADTA, Columbian Airlines ordered two; and KLM ordered four.

The DC-5 performed almost perfectly. During test flights, the only problem to arise was tail flutter. The horizontal stabilizer, originally straight, was given a 15-degree dihedral. A dorsal fillet was added between the vertical stabilizer and the upper fuselage. After some slight modifications to the wings and the engine exhausts, the DC-5 flew like its predecessors.

William Boeing, Douglas's chief rival, was so impressed with the DC-5 that he bought the prototype for use as his personal



The prototype DC-5 (top) as it appeared prior to flight testing, and (below) with all modifications completed, before delivery to William Boeing. The Douglas logo on the nose has been replaced by "Rover." (McDonnell Douglas Corporation)



Ease and speed of passengers and baggage transfer is evident in this demonstration at Mines Field (now Los Angeles International Airport). (McDonnell Douglas Corporation)



Zonvogel, the last KLM DC-5 seen prior to delivery. Good comparison photo with sister ship DC-3.

(McDonnell Douglas Corporation)



The low, level floor of the DC-5 made cargo loading fast and easy without the need for ground support equipment.

(McDonnell Douglas Corporation)

aircraft. Douglas converted it to an eight-passenger club transport and delivered it to Boeing on April 19, 1940. As a down payment, Boeing traded in his *Dolphin* which he had purchased from Douglas in 1934. Ironically, the wooden-wing *Dolphin* still survives, whereas the all-metal DC-5 was scrapped in 1946.

The destiny attendant to World War II was to change forever the potential of the DC-5. Hitler invaded Poland before KLM took delivery of its four DC-5s. Intended for KLM's European routes, KLM diverted them to their Dutch East Indies routes. They survived, ferrying war refugees to Australia until the Dutch East Indies was overrun by the Japanese in the fall of 1942.

One aircraft escaped to Australia and two crashed on their run for safety. The fourth was damaged in an air raid in Java and captured by the Japanese. It was repaired and taken back to Japan. It was reported still flying in 1944, when it was put on display with other captured Allied weapons. After the display was dismantled, it mysteriously disappeared. Its ultimate fate is unknown but it is believed that it was de-



Ease of maintenance is being demonstrated in this publicity photo. (McDonnell Douglas Corporation)



Interior view of the passenger cabin shows the clean lines and ample head room of the DC-5. The **two** main compartment partitions concealed the heavy structure supporting the wings in lieu of spars in the cabin area. (MDC)

stroyed in an American air raid.

The DC-5 to reach Australia was pressed into service by the Australian government. It was eventually purchased by the USAAF and designated C-110DE (s/n 44-83232).

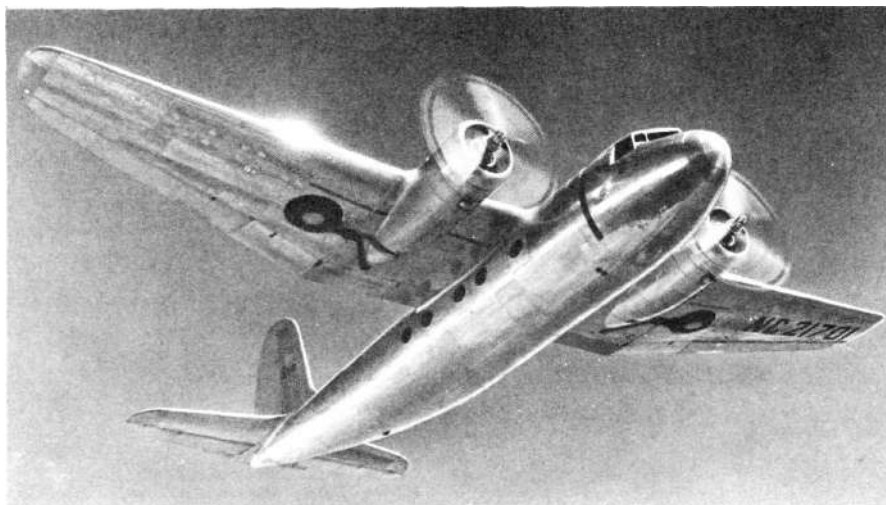
This aircraft (s/n 44-83232) probably had the most glamorous career of all the DC-5s. After World War II in 1946, it was sold to Australian National Airways (ANA) as scrap. ANA repaired it (from DC-3 parts) and put it into passenger service for a while. In 1947, it was sold to Holland Airways. Somehow, it turned up in Israel in 1948. Used by the Israeli Air Force a short time, it was called the "Bagel Lancer." It was used in the Tel Aviv Tech School for airframe instruction until 1955 when it was sent to the scrap heap.

The remaining seven DC-5s never made it to Penn Central or SCADTA. Three 16-passenger models went off to the U.S. Navy and were designated R3D-1s. The other four were built as cargo models and designated R3D-2s. They were used by the U.S. Marine Corps for cargo service and paratroop training. Later, William Boeing's DC-5 was purchased by the Navy and designated R3D-3.

Of the eight DC-5s flown by the Navy, one crashed on its initial flight (aileron cross rigging was blamed for the crash) and one was destroyed in a hangar during the Japanese attack on Pearl Harbor. The six remaining Navy and Marine Corps aircraft survived the war only to be scrapped in 1946.

There were no other DC-5s built because shortly after Pearl Harbor the DC-5 production facilities were pressed into production of the SBD Dauntless. In addition, the DC-3, a tried and proven performer, was already in full production with more than 800 civilian versions already flying. (Eventually more than 11,000 DC-3s were manufactured.)

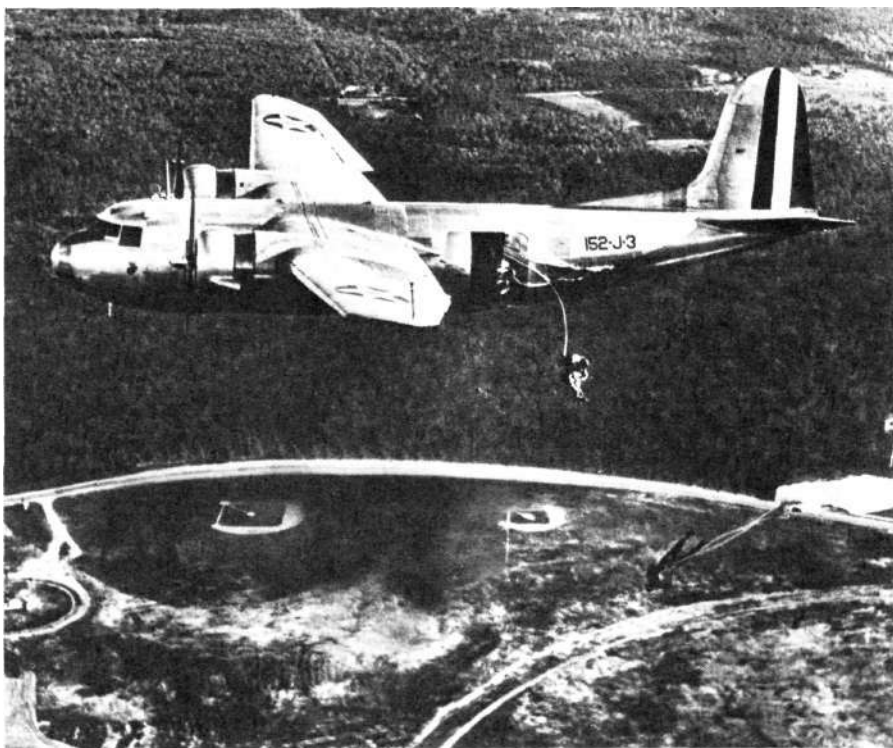
There is no doubt that if World War II had not happened when it did, the DC-5 would have gone into full production. Given time, the Douglas people would have made the DC-5 a new star in the heavens.



Early inflight view of the DC-5 from below — the main gear retracted outboard into wells, but the nose gear was fully enclosed. (McDonnell Douglas Corporation)



Wakago was shipped to Curacao, because of the war in Europe. Here it is shown ready for service. Note the addition of dorsal fillet and the new horizontal stabilizer configuration. (KLM)



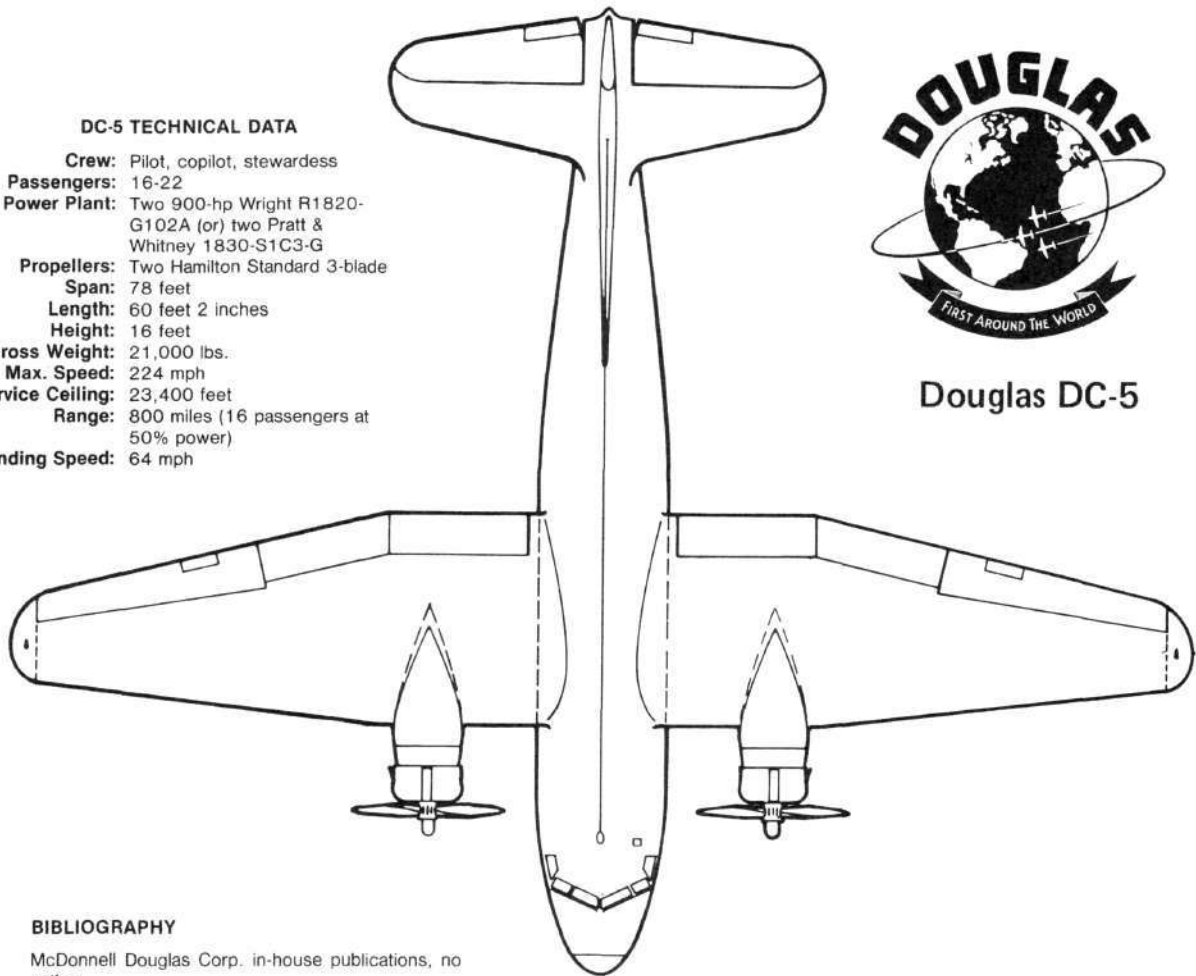
One of the two R3D-2s used by the Marine Corps Squadron VMJ-1, Quantica, VA, on paratroop training over Lakehurst Naval Air Station, NJ. (McDonnell Douglas Corp., Harry Gann)

DC-5 TECHNICAL DATA

Crew: Pilot, copilot, stewardess
Passengers: 16-22
Power Plant: Two 900-hp Wright R1820-G102A (or) two Pratt & Whitney 1830-S1C3-G
Propellers: Two Hamilton Standard 3-blade
Span: 78 feet
Length: 60 feet 2 inches
Height: 16 feet
Gross Weight: 21,000 lbs.
Max. Speed: 224 mph
Service Ceiling: 23,400 feet
Range: 800 miles (16 passengers at 50% power)
Landing Speed: 64 mph



Douglas DC-5



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