

The Douglas DC-5

A sharp break with tradition.

BY PETER M. BOWERS

This article was written in response to a letter from Dr. Richard P. Myer, AOPA 153040, who asked if there ever was a Douglas DC-5. Yes, Doctor, there was a DC-5, and a very interesting design it was.

The Douglas DC line (for Douglas Commercial) achieved worldwide domination of the airline business, starting with the DC-2 of 1934, and held it for nearly a quarter of a century. Douglas is still a top supplier with its DC-9 and DC-10 models.

The DC line began under rather unusual circumstances. Boeing revolutionized the airline business with the milestone Model 247 in 1932/1933. Since United Air Lines ordered 60 of these at once, it had Boeing's production tied up for a couple of years; the other lines were unable to get the new model for their own routes. This situation was untenable to TWA, which then asked Douglas to develop a transport that would match or exceed the 247. The result was the DC-1, which was even more advanced than the 247. The production version, the 14-passenger DC-2, soon put the 247 out of business on the trunk routes. The DC-2 itself was expanded into the 21-day-passenger/14-sleeper DC-3 at the request of American Airlines, and Douglas domination

Peter Bowers, AOPA 54408, works for Boeing. But when he flies, he prefers antiques or his homebuilt, winner of the 1962 EAA design contest.

of the world transport scene was complete.

The next Douglas model was the single DC-4E (for Experimental), a joint venture between Douglas and several airlines for a 42-day-passenger/30-sleeper, four-engine type for the major routes. Flown in June 1938, this was too much airplane for the job and had poor economics, in spite of an increase to 52 passengers; so it was dropped in favor of a smaller model still called DC-4, which flew early in 1942. The airlines did not get the new DC-4 until after the war; all production through 1945 went to the Army and the Navy as C-54s and R5Ds. Meanwhile, work got under way on a small twin-engine model for short routes, the DC-5.

From the very start, this was different. At the time, some people did not even consider it a "real Douglas." It was not designed and built in the Santa Monica, California, plant, home of the other DCs, but at the El Segundo Division plant on Los Angeles Municipal Airport. This originally had been the Northrop Corporation, founded in 1932, with 51-percent ownership by Douglas, but had been absorbed as a Douglas division in 1937. Design work on the 16- to 25-passenger DC-5 began in 1938.

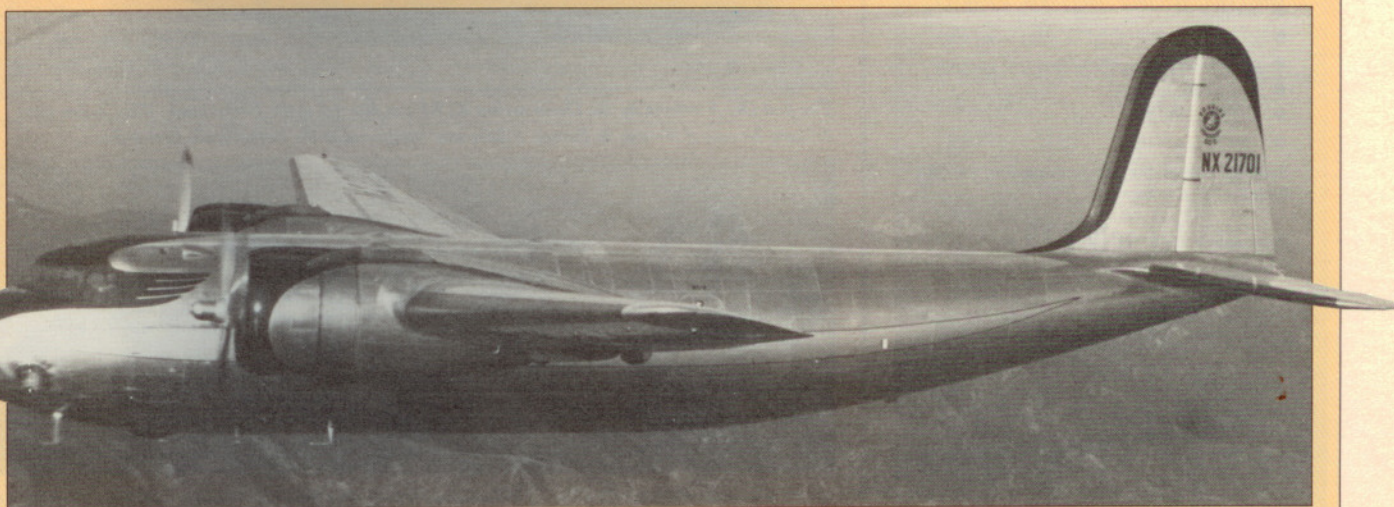
The DC-5 broke sharply with the existing Boeing/Douglas standard by being a high-wing monoplane with the still-new-fangled tricycle landing gear. The high wing complicated the landing-gear design and retraction problems. Very little previous DC detail

went into the DC-5. In general configuration and design detail, it had much more in common with the military attack bombers under development at El Segundo than with the Santa Monica DCs. Powerplant installation details ahead of the firewall and miscellaneous hardware items such as pilots' seats and certain control-system components were the only standard DC-3 items used.

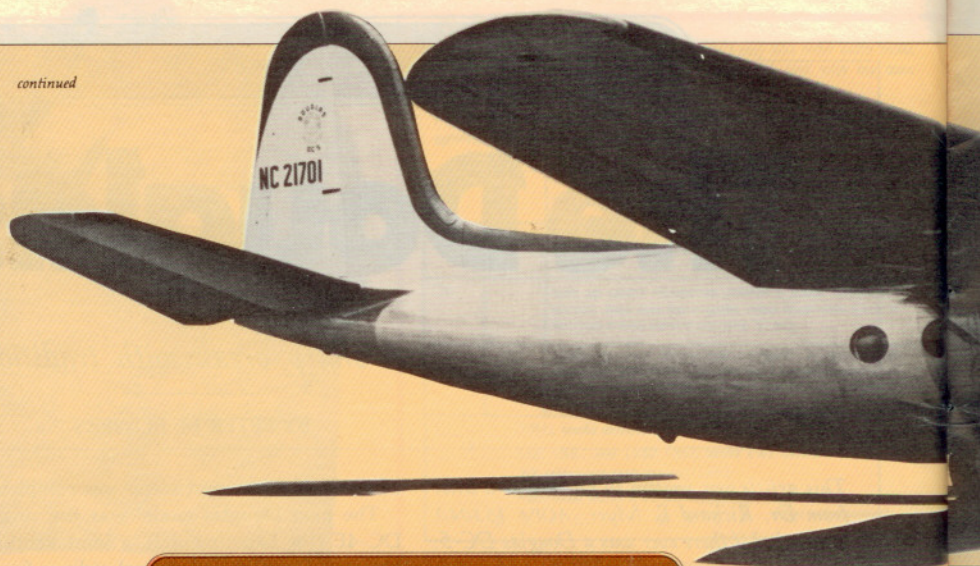
Unlike the previous DCs, the DC-5 was not designed to a specific airline requirement, and there were no eager customers waiting for it. Douglas developed the DC-5 on its own for the short-range market. Smaller and lighter than the DC-3 but powered with the same 900- to 1,000-hp Wright "Cyclone" engines, it was expected to be well suited to operations from small airports and could clear a 50-foot obstacle with a 1,100-foot takeoff run at sea level.

The first flight was made in February 1939. The new transport was relatively trouble-free. After a tail buffet problem, resulting from airflow off the wings and engine nacelles striking the tail, was overcome by adding generous dihedral to the horizontal surfaces, Approved Type Certificate A-727 was awarded on May 4, 1940.

Meanwhile, the sales campaign, backed by the now preeminent Douglas reputation, had lined up initial orders for 21 DC-5 airliners. British Airways ordered nine in August 1939 and even put down a 25-percent deposit; the outbreak of World War II a



In one of the early stages, Douglas considered a straight horizontal tail for its high-wing DC-5.



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month later forced cancellation of the order. One U.S. airline, Pennsylvania Central, ordered six, and two other foreign lines, KLM in Holland and Scadta in Colombia, ordered four and two, respectively. The war changed all of that, and all civil orders but KLM's were canceled. Production priorities changed at Douglas, too. In addition to the prototype and the four KLM airplanes, seven others were sold to the U.S. Navy and Marines for a total of 12 Douglas DC-5s.

In April 1940, the prototype was sold to William E. Boeing as a special deluxe model, which he named Rover. Boeing, who had retired from the company that he founded in 1934, traded in a Douglas "Dolphin" amphibian, also named Rover, that he had owned since 1934 on the DC-5.

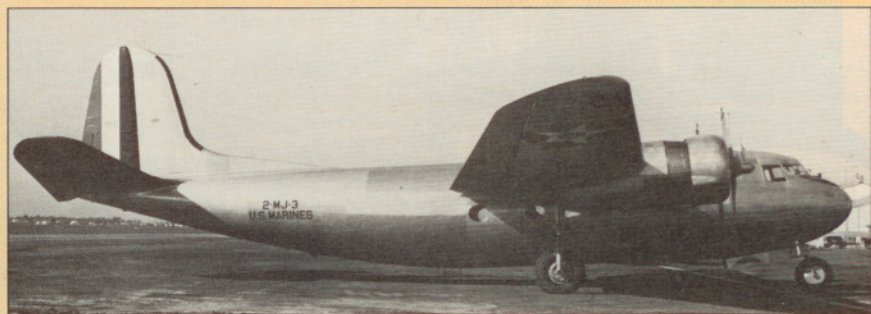
The Navy models were designated R3D-1. (This was a lower designation than the

Navy DC-3s that became R4Ds, because the Navy bought DC-5s before it bought DC-3s.) These differed from the civil models mainly in having 1,000-hp instead of 900-hp Cyclones and fuel capacity increased from 550 gallons to 650. One of the three Navy models, which originally were VIP transports, was lost in a predelivery crash. The four Marine Corps R3D-2s were basically freighters, with large double-section cargo doors on the left side of the fuselage behind the wing; but they could be fitted with up to 22 paratrooper seats.

Two R3D-2s were at Pearl Harbor on December 7, 1941, and later went to Australia, where one had the dubious distinction of being shot down by a Japanese submarine. The three surviving Marine models were scrapped in the U.S. after the war. In February 1942, the Navy drafted Boeing's Rover

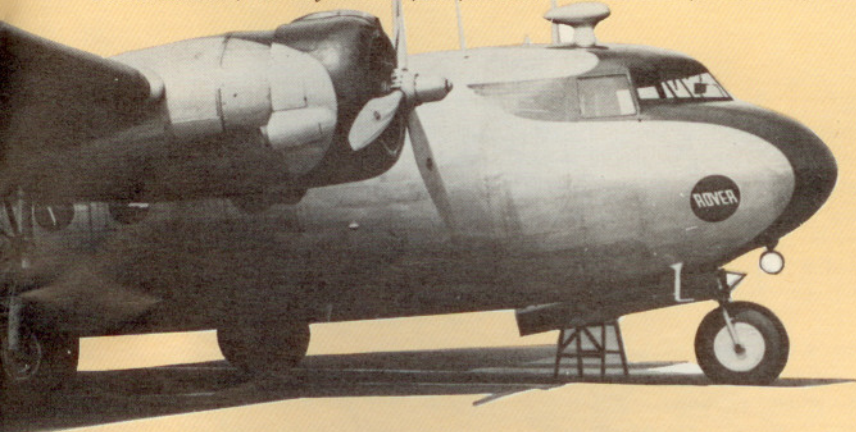


The first DC-5 ordered by the Dutch airline KLM was diverted to the Netherlands West Indies upon delivery because of the war in Europe. It later was transferred to the Netherlands East Indies.



R3D-2 was the Marine Corps designation for the DC-5. The Marine Corps aircraft were basically freighters, but could hold 22 paratroopers. Two R3D-2s were at Pearl Harbor on December 7, 1941.

Rover goes to war. William E. Boeing (yes, the Mr. Boeing) bought the prototype DC-5 and named it Rover. However, the Navy had other plans for Rover, and in 1942 drafted the aircraft as R3D-3.



and gave it the naval designation of R3D-3.

The four KLM models had most interesting careers. Originally intended for KLM's European routes, they were assigned Dutch registrations PH-AXA, AXB, AXE and AXG. Since the war ruled out such use, two were sent to the Netherlands West Indies as PJ-AIW and AIZ and the other two were sent to the Netherlands East Indies as PK-ADA and ADB. After a year of service in South America, PJ-AIW and AIZ were fitted with temporary long-range tanks and ferried to the East Indies, where they were re-registered PK-ADD and ADC, respectively.

All were pressed into service for the evacuation of Java early in 1942. PK-ADA was damaged by Japanese fire just before a last-minute takeoff and was captured with its passengers and crew. It was repaired quickly and flown to Japan, where it was analyzed and tested extensively, in the hope that it could benefit contemporary Japanese transport design. It later was used as a trainer and was scrapped after the war.

The other KLM DC-5s ended up in Australia, where they served with the Royal Australian Air Force while carrying the civil call letters VH-CXA, CXB and CXC. In 1944, all three were drafted by the U.S. Army Air Force and given the designation C-110. Two were scrapped in Australia after the war; but one, the former PH-AXB/PJ-AIZ/PK-ADC/VH-CXC, was sold, ostensibly for scrap. Australian National Airlines, the buyer, fixed it up, re-registered it

as VH-ARD and put it into service for a year before selling it to New Holland Airways. In 1948, the last of the DC-5s was sold to Israel and ended up as nonflying training equipment at a technical school.

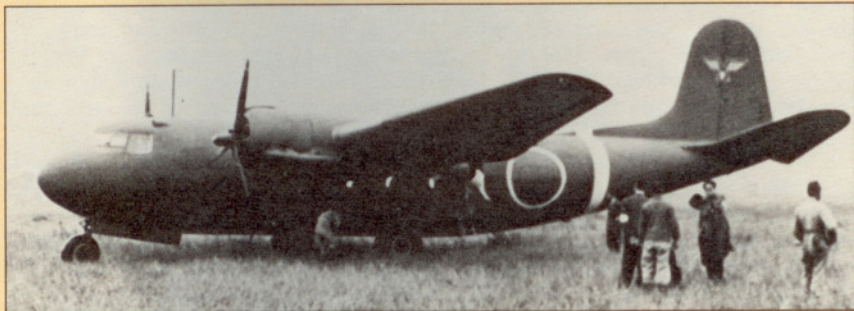
The demise of the DC-5 did not mean the end of that particular configuration. It reappeared postwar in the prototype-only Lockheed "Saturn," the advertised but unbuilt Boeing 417 and in several European designs. The most notable is the Fokker F.27, the world's most widely used turboprop airliner and one that is still in production. □

DOUGLAS DC-5 Specifications

Powerplant	Wright "Cyclone" GR-1820-G102A 900 hp @ 2,300 rpm (1,100 hp takeoff)
Wingspan	78 ft
Length	62 ft 6 in
Wing area	825 sq ft
Wing loading	22.18 lb/sq ft
Power loading	8.32 lb/hp
Empty weight	13,175 lb
Gross weight	18,300 lb

Performance

High speed	225 mph
Cruising speed	197 mph
Stall speed (no flaps)	78 mph
Stall speed (with flaps)	65 mph
Initial climb	1,300 fpm
Useful ceiling	21,900 ft
Range (65% power)	14,000 sm



One of the KLM DC-5s was captured by the Japanese early in 1942. The KLM models were the only ones fitted with slotted wing tips, a feature that greatly intrigued the Japanese.