

No. 23

Douglas DC-4 aircraft crashed on approach to land at Córdoba Airport on 17 June 1953. Argentina Accident Investigation Report No. 173.
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Circumstances

On 17 June 1953 at 1930 hours (local time), a Douglas DC-4 aircraft met with an accident approximately 12 km. north of the Córdoba airport while an approach to land. The aircraft carried 7 crew and 34 passengers.

The pilot in command of the aircraft had a total of 14,000 hours of flying time and the co-pilot 5,300 hours.

The pilot in command and the co-pilot suffered superficial injuries as a result of the accident, but the remainder of the crew and the passengers were uninjured. The aircraft was totally destroyed.

Investigation and Evidence

The investigation revealed that the aircraft left Santa Cruz de la Sierra (Bolivia) on a scheduled airline flight and landed without incident at Salta 2 hours and 30 minutes later.

It took off from Salta airport for Córdoba at approximately 1645 hours (local time). At take-off the aircraft was carrying a total load of 3,512 kg.

The route forecast as far as Marcos Juarez was as follows: partly cloudy, visibility 15 km., strato-cumulus cloud 7/8ths at 800m., alto-cumulus 3/8ths at 3,000m., upper wind 20° 13/15 knots.

The aircraft contacted Córdoba airport control tower at 1856 hours (local time) and was cleared to enter the airport zone.

At 1925 hours (local time) it passed over the radio beacon and the control tower provided the following weather information: horizontal visibility 6 km., average height of cloud 250 metres, pressure for altimeter correction 30 inches, surface wind SE, 10 to 11 knots.

The approach to the airport was begun under IFR conditions, at an indicated speed of 140 mph and at an altitude of 5,100 feet above the radio range (the requirement is 4,400 feet). The aircraft flew a course to the north for 1 minute 50 seconds, with 15° flaps and then, continuing the descent, it turned to the right on a 45° course, flying in this direction for 1 minute more. The altitude just before the turn was 3,100 feet. It then turned to the left on a course of 225°. When the aircraft direction finder indicated 40° to the left, the compass was set at 180° and the direction finder maintained at 0°. At that moment, according to the evidence, the instruments indicated an altitude of 2,980 feet. The aircraft flew at this altitude for 30 seconds, and the engine speed was reduced for landing. It continued to descend for another minute 20 seconds until the altimeter indicated 2,200 feet. At that instant, according to the statements made by the pilot-in-command and the co-pilot, the aircraft came into contact with the ground. The aircraft was finishing the final straight-in approach to the airport and was aligned exactly with runway 17.

An inspection by the investigating board at the scene of the accident established the following:

The terrain, 12 km. north of Córdoba airport, is 150 metres higher than the airport itself. It slopes gently to the south and is flat and almost clear of obstacles.

The first impacts made by the tips of the propellers, beginning with the inner port propeller, occurred fifty metres beyond the point of the first impact; the fuselage, the engines, and the central section of the wings were dragged along, bending the propellers and tearing them off with the reduction gears and parts of the upper engine crankcases, the engine cowlings and the lower electrical radio equipment which was scattered over an area from 50 to about 350 metres beyond the point of first impact. At 400 metres, the aircraft crashed through a roadway fence, breaking the right wing and stopping some 70 metres farther on, where it burst into flames as a result of broken fuel lines. It was not possible to use the fire extinguishers owing to the haste with which the occupants left the cabin, nor to use the airport safety equipment because of the distance and difficulty of access to the scene of the accident.

Further evidence established that when the approach was half completed, the pilot decided to continue his instrument approach using the radio range only, since the crew had at no time been able to tune in to the "C" marker beacon although the equipment on the aircraft was operating properly. The approach procedure in this case is to descend to the critical height of 150 metres and, if the runway cannot be seen, to break-off and head for the alternate aerodrome.

On commencing the final approach, the pilot continued his descent with the intention of reaching the critical height and then breaking off. Since he was unaware of his distance from the aerodrome and of the elevation of the terrain over which he was flying, impact with the ground, while the altimeter indicated 2,200 feet, was completely unexpected.

The crew of an aircraft which had landed a few moments earlier reported that although the "C" marker beacon was not sending a distinct signal, they had been able to pick it up.

Since it was evident that the accident was caused by the fact that the aircraft had been unduly deflected toward the north during the instrument approach, the investigation attempted to discover the reasons for that deflection. The following probable factors were considered:

1) An analysis of the approach manoeuvre indicated that it had been started at a greater altitude than that prescribed by the instrument approach procedures. This in itself would result in a steeper descent on the northern course, and it is possible therefore that the speed of 140 miles per hour was exceeded by 5 or 10 knots, particularly since the landing gear was retracted and tail wind was not taken into account in timing the manoeuvre.

2) The co-pilot stated that he called the time on his stop-watch, using the small second-hand because the large one was not working properly. This was confirmed by the Investigating Board. Since the co-pilot was wearing the watch on the left wrist and working constantly with that hand in trying to tune in the "C" marker beacon, his time readings may have been inaccurate with the result that the total time may have been exceeded by a few seconds.

3) The possibility of upper wind of an intensity greater than that registered on the surface.

This theory was accepted, taking into account the fact that two fronts of the "upper cold front" type occurred at Córdoba on 17 June 1953.

The first passed between 1300 and 1400 hours, local time, and was of limited activity causing an increase in medium and high clouds with a wind shift from the NE to the SE sector at a velocity of 5/12 knots. The second front reached Córdoba at 1700 hours local time with normal activity and with centres of instability accompanied by rain and an electric storm. The velocity of this second front was approximately 57 km/h and it moved towards the NE. At 1925 hours local time, the upper wind at 1,500 m. above the tower was estimated to be at 180° and approximately 25/30 knots.