

No. 12

Aerovías Nacionales de Colombia, DC-3C, HK-155, crashed on a spur of the "Trujillo Hills" on 9 March 1957, Report released by the Department of Civil Aviation, Colombia.

Circumstances

HK-155 departed Cali for Condoto at 0827 hours (local time). It reported taking-off from Condoto on the return flight at 0950 hours and advised that it would fly via Buenaventura. At 1037 hours Cali began calling the aircraft but received no answer. The wreckage of the aircraft was subsequently located and it was found that all 15 persons aboard had been killed in the accident.

Investigation and Evidence

Shortly after take-off, HK-155 changed from Condoto Tower frequency to the Cali aeronautical telecommunications frequency and reported at 0958 that it had departed Condoto at 0950 with a load of 975 kg including 11 passengers and that it was proceeding to Cali via Buenaventura. No record could be found of a later call from the aircraft on any of the frequencies available. The flight from Condoto to Cali would normally take about 50 to 55 minutes. At 1037, Cali called HK-155 but received no reply. The Cali route frequencies log indicates at 1107 that Bogotá ATC had declared an alert with regard to HK-155.

Weather

The weather conditions in the area are known from 0900 weather reports of Cali, Condoto, Tuluá and Pereira. The decoded reports for 9 March are as follows:

Condoto 0750 hours - wind: calm; visibility: 6 km; ceiling: 8/8 stratocumulus at 200 m. Airport open. Weather improving slowly.

Cali 0900 hours - wind: calm; visibility 25 km; ceiling 5/8 stratocumulus 900 m., smoke;

1000 hours - wind: calm; visibility 25 km; ceiling 4/8 cumulus at 600 m., smoke;

Tuluá 1000 hours wind west 6 knots; visibility 25 km; unlimited. Ceiling: 2/8 cumulus at 540 m.

Pereira 1000 hours - wind: calm; visibility 20 km, unlimited; ceiling 4/8 large cumulus at 900 m.

Cali 1100 hours - wind: calm; visibility 30 km; ceiling 3/8 cumulus at 600 m.

Examination of the wreckage

Taking into account the trail left on the mountain by the aircraft and the section of the fuselage which was not destroyed, it was established that at the time of the

accident the aircraft's heading was 210 degrees.

The right wing was bent backwards and the left wing was found 20 metres from the trail left by the aircraft. From the position of the wreckage of the wings it is clear that the aircraft did not alter course, except perhaps by a few degrees. Furthermore, from the ascending angle of the trail, it appears that the pilot tried to clear the hill by pulling back on the controls as much as possible. The wreckage was examined and it was found that the cockpit had been destroyed to such an extent that nothing was found apart from one of the radio compass controls which was set on the 850 band at 1 750 kilocycles.

The tail section was found in good condition and it was established that the aircraft was in level flight in view of the position of the elevator trim tabs.

The engines embedded themselves to the right of the aircraft with both their nose crank shafts broken. The propellers disappeared when the nose crank shafts broke and it is assumed that they flew off to the right. The forest is so thick and the area in which they might be located is so extensive that it was impossible to cover them.

It cannot be assumed that either the aircraft or the engines suffered any damage which had prevented continuation of the flight. Had this been the case, the aircraft would not have headed towards a hill and the pilot would have attempted a landing on the level tops of the trees. Moreover, if there had been simultaneous malfunctioning of both engines the pilot would have reported this emergency by radio. The engines' carburettors were destroyed and, in coming loose, the right engine caught fire. It should be noted that the only traces of fire were found in this engine which was not completely destroyed

because it was cut off from the source of fuel and oil.

It was impossible to establish the exact time of the accident because none of the watches recovered had stopped as a result of impact damage.

The aircraft was at latitude $04^{\circ} 06'$ and longitude $76^{\circ} 29' 30''$ at an elevation of 7 800 feet. By drawing a straight line from Condoto airport to Cali airport it can be seen that the aircraft would have followed a 172° heading and that the point where it crashed is located on that straight line. Although the pilot stated that he was following the Buenaventura route, there is no doubt that he tried to follow the direct route. It may be that having changed over to instrument flight and being aware that in following the direct route he would be flying over the highest point of the range of mountains he attempted to turn to the right, changing his heading from 172° to 210° , in order to enter the valley at the lowest point of the range. Moreover, the prevailing winds must have caused the aircraft to drift towards the left and if the flight on instruments lasted for some time it is possible that the aircraft was carried towards the hills without the pilot becoming aware of it in time.

Up to the day preceding the accident there were no reports in the flight log regarding compass or altimeter errors.

The captain had flown a total of 9 187:22 hours at the time of the accident. He had flown, in the last three months, a total of 233:03 flying hours including 19:31 hours in the last ten days before the accident. He was fined \$50.00 (Colombian) under Order No. 62 of 17 October 1952 for exceeding flight time limitations.

The co-pilot had flown a total of 1 493:51 hours, including 263:05 in the last three months and 38:08 in the ten days preceding the accident.

Probable Cause

Instrument flight at inadequate altitude.

Contributing causes

1. The Buenaventura route was not followed.
2. Instrument flight which precluded visual means of checking the aircraft's position.
3. The pilot did not consider it necessary to check his position by means of El Paso radio beacon.

4. Over-confidence on the part of the pilot regarding his knowledge of the route.
5. Flight outside the established route or airway.
6. Unfavourable weather conditions.

As the aircraft crashed on the direct route Condoto-Cali and the said route had not been authorized by the Civil Aeronautics Department, it can be logically assumed that the pilot is solely responsible for this accident since he flew, on instruments, a route which had not been authorized, even for visual flights.

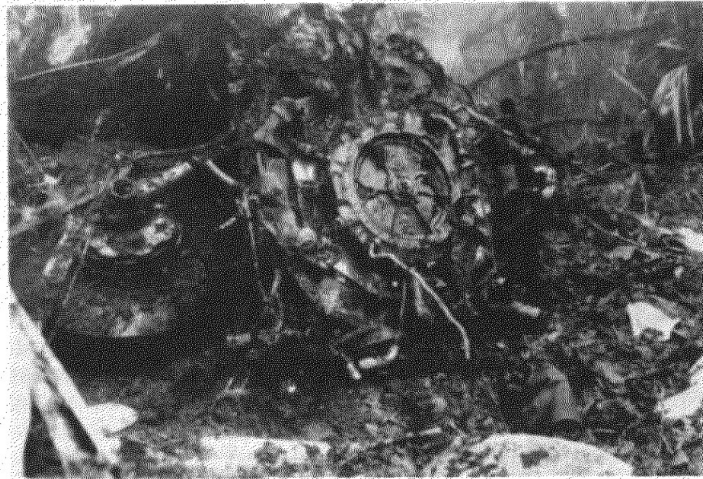


FIGURE 9

DC-3C, HK-155, which crashed on a spur of the "Trujillo Hills", Colombia on 9 March 1957.

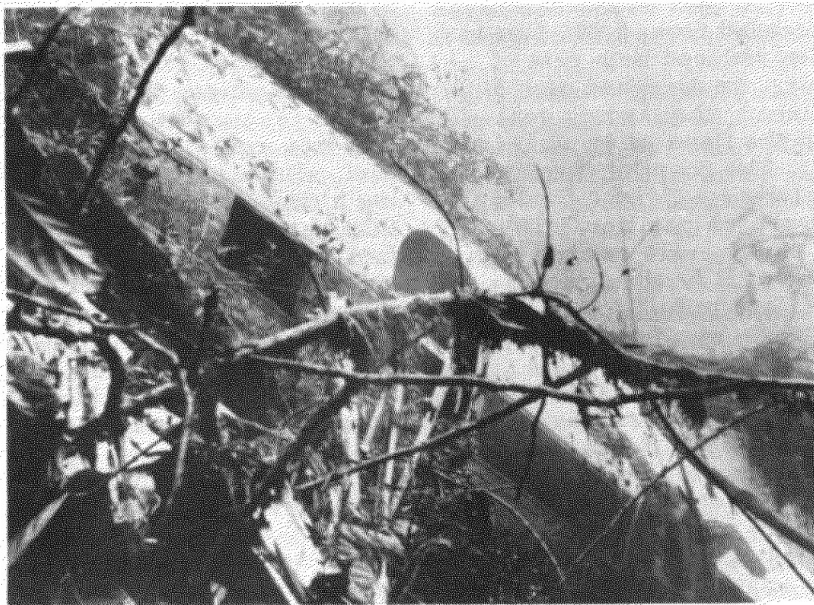


FIGURE 10