No. 24

Taxader Airlines, DC-3, HK-437, accident 15 km from Barrancabermeja Airport, Colombia, 6 December 1962. Report released by the Air Safety Division, Civil Aeronautics Department, Colombia.

1. Historical

1.1 Circumstances

Flight 209 was a scheduled public transport flight from Bucaramanga to Barrancabermeja and was to return the same evening. The aircraft departed Bucaramanga at 1628 hours and six minutes later the pilot reported crossing the Palonegro beacon and that the flight was proceeding normally. It was heading west at 4 500 ft and estimated its time of arrival at Barrancabermeja as 1650 hours. This was the last and only report received from the aircraft. The aircraft crashed sometime between 1640 and 1730 hours local time, in daylight.

1.2 Damage to aircraft

The aircraft was totally destroyed.

1.3 Injuries to persons

At the time of the accident 3 crew (2 pilots, 1 stewardess) and 23 passengers were aboard the aircraft. All crew members and 21 of the passengers were killed in the accident.

2. Facts ascertained by the Inquiry

2.1 Aircraft information

Its overhaul check and maintenance history showed that it was airworthy although a few minutes before take-off on the subject flight a radio failure had occurred. This was rectified immediately. Its airworthiness and radio certificates were valid until 15 July 1963 and 15 June 1963 respectively.

The aircraft's estimated weight and centre of gravity at the time of the accident were within the allowable limits.

2.2 Crew information

The pilot-in-command, holder of a valid airline transport pilot's licence, had flown a total of 7 000 hours. As pilot on DC-3 aircraft he had flown a total of 2 566 hours which included 189.37 hours flown during the previous 90 days and 3.45 hours flown in the previous 24 hours. He knew the route well and had made the same flight in the same aircraft a few minutes before, only in the opposite direction.

The co-pilot was the holder of a valid commercial pilot's licence and had 1 064 hours flying time to his credit. However, on DC-3 aircraft he had limited experience. He had flown 61 hours as observer on them, 252 hours as a trainee and 18.51 hours as co-pilot. His flight time on DC-3s during the preceding 24 hours amounted to 3.45 hours.

2.3 Weather information

At the time of departure from Bucaramanga the weather conditions were good. The pilot made no request for a weather report or forecast. This was probably because he had arrived at Bucaramanga from Barrancabermeja only half an hour before and felt he was familiar with the conditions to be expected along the route. Although the Bucaramanga conditions were good, sectors of the route southwest, west and northwest of it were experiencing bad weather.

The weather forecast read as follows: "ceiling partially covered or ragged from 0/8 to 4/8 with cloud base from 1 500 to 2 000 ft; altostratus and altocumulus cloud layer from 10 000 to 12 000 ft, broken and interspersed with cirrus and cumulostratus above 28 000 ft. Scattered cumulonimbus with electric storms and heavy showers near the mountains in the afternoon and evening."

The two surviving passengers stated that at the time of the accident the aircraft was being rocked by turbulence and was flying through rain and mist. A "tremendous storm" was mentioned. Their testimony showed that the flight was being conducted under visual flight rules (VFR) in instrument meteorological conditions (IMC). If the pilot did not wish to fly on instruments (IFR) he should have flown around the cumulonimbus which was developing rapidly.

2.4 Navigational aids

The ground radio navigation aids available for the flight were non-directional beacons at Barrancabermeja and Bucaramanga. The aircraft was fitted with two ADF radio compasses. The radio beacons at Bucaramanga and Barrancabermeja were operating satisfactorily at the time of the flight.

2.5 Communications

The aircraft was equipped with HF and VHF. The pilot was in touch with Bucaramanga shortly after take-off and no communications difficulties were experienced at that time.

2.6 Aerodrome installations

The only facility not in working order was the airport lighting system at Barrancabermeja, however, it would not have affected this flight which was being carried out in the daytime.

2.7 Fire

The investigation revealed no traces of fire aboard the aircraft.

2.8 Wreckage

The wreckage of the aircraft was found later in the week in thickly-wooded terrain at an elevation of 450 ft, 15 km from Barrancabermeja on a bearing of 90° from the airport. The crash site was on the aircraft's flight route. The terrain at the site was undulating and marshy, and the ground had been flooded by a heavy downpour.

3. Comments, findings and recommendations

3.1 Discussion of the evidence and conclusions

A study of the wreckage trail showed that following collision with the first tree 38 m high the aircraft decapitated trees over a distance of 200 m in its descent. At first impact the wings were horizontal, and the aircraft was under the control of the pilot. It continued its descent with wings level and 10° nose down on a well-defined glide path and heading. The landing gear and flaps were retracted. At the time of the main impact the aircraft's speed was estimated to be about 90 to 120 kt. Propeller blade damage indicated that the engines were at reduced power.

No structural failure occurred prior to impact.

From rings left by the fuel on the fuel tanks it was calculated that the aircraft was carrying 230 gallons of gasoline evenly distributed between the forward tanks. This showed that ample fuel was available to complete the flight and let-down or return to the point of departure.

Examination of the records revealed that the left altimeter had gone unchecked for fifteen months in contravention of the aeronautical regulations which called for six-monthly checks. Following the accident the altimeter read 450' and was set at 29.9".

The right altimeter read 7 500' and was set at 30.0". Two defects were found in it. The pin holding together the main mechanism was missing, and the pins holding the main dial were of wood instead of metal as required by the technical regulations.

Tests conducted in the United States of America have shown fairly considerable fluctuations of altimeter readings during flight through heavy rain. Deviations of from 75 to 200 ft have been reported.

3.2 Probable cause

The accident was attributed to an error of judgement on the part of the pilot in trying to fly VFR in IFR conditions. The heavy rain prevented him from seeing trees with which he collided, and loss of control of the aircraft resulted.

3.3 Recommendations

All pilots are urged, wherever IFR conditions prevail en route, to adhere strictly to the appropriate procedures. If bad weather takes the form of cumulonimbus, the latter is to be circumnavigated or the aircraft must return to the alternate.

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