

No. 16

SPANTAX Airlines S.A., Douglas DC-3, EC-ARZ, accident at El Ortigal de Arriba near the municipal limits of La Laguna, Santa Cruz de Tenerife, on 7 December 1965. Report dated 10 June 1966, released by the Subsecretariat of Civil Aviation, Spain

1.- Investigation1.1 History of the flight

The flight was a non-scheduled domestic flight from Tenerife to Las Palmas. It took off from runway 30 at Tenerife Airport with an IFR flight plan at 1830 hours and disappeared from the view of the tower controller in low cloud about 500 m before the end of the runway. According to the tower controller, the pilot acknowledged the last instructions from the tower two minutes after take-off and did not re-establish contact afterwards. The aircraft was not seen again until a few moments before the accident which was presumed to have occurred between 1834 and 1840 hours according to witnesses.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	4	28	
Non-fatal			
None			

1.3 Damage to aircraft

The aircraft was destroyed.

1.4 Other damage

There was no other damage mentioned in the report.

1.5 Crew information

The pilot-in-command held an airline transport pilot's licence and international radio telegraphy operator's licence valid until 8 July 1969. He had a DC-3 rating valid until 6 June 1966. He became pilot-in-command on 15 April 1964. He had flown a total of 1246 hours on DC-3 with SPANTAX including 425 hours as co-pilot and 821 hours as pilot-in-command.

The co-pilot held a senior commercial pilot's licence valid until 24 November 1969. He held a DC-3 rating valid until 19 April 1966 and an instrument rating. He had flown a total of 232 hours with SPANTAX.

The air hostess joined SPANTAX on 1 March 1963 and had flown a total time with the Company of 1 401 hours.

Also aboard was a crew member in training.

1.6 Aircraft information

The certificate of airworthiness of the aircraft was valid until 28 March 1966. The aircraft had flown a total of 19 245 hours and had accumulated 3 927 hours since the last major overhaul and 3 hours since its last periodic check. The maximum weight at the time of impact was 11 429 kg which was lower than the maximum permitted weight of 11 880 kg.

The type of fuel being used was not stated in the report.

1.7 Meteorological information

The take-off took place in adverse atmospheric conditions. The 1830 hour AERO, when take-off clearance was given was:

Wind: 040°/16 kt;
Visibility: 500 m;
Intermittent slight drizzle;
Cloud: 6/8 ST 30 m; 2/8 ST 150 m;
Temperature: 13°;
QNH: 1 021

The cloud bank must have been over 7 000 ft thick since another aircraft flying above the airport at flight level 70 at the time of take-off reported that it was in cloud.

The wind and barometric pressure graphs indicated that a front passed over Tenerife Airport between 1750 and 1850 hours.

According to the Chief of the Meteorological Observatory at Tenerife Airport, winds of 30 to 40 kt were registered at altitudes below 1 500 m, with possibilities of gusts of 45 kt 100 m or so above the airfield and of associated turbulence in the area of the accident. However it was unlikely that there were any down-draughts.

1.8 Aids to navigation

Not relevant to the accident.

1.9 Communications

No communication difficulties were mentioned in the report. The last communication from the aircraft was received two minutes after take-off when the pilot acknowledged instructions from the tower. Further attempts to re-establish contact with the aircraft were in vain.

1.10 Aerodrome and ground facilities

Not mentioned in the report.

1.11 Flight recorders

Not mentioned in the report.

1.12 Wreckage

It is presumed that the aircraft hit the ground in a spin. No debris was found prior to the place of impact.

The first mark on the ground was a shallow furrow about 12 m long made by the left wingtip. The main impact produced a crater in which roughly 60 per cent or more of the wreckage was found, including the right wing, both engines and their propellers, one leg of the main landing gear, the cockpit and part of the fuselage. The rest of the aircraft was scattered along a straight line with slight dispersion in the form of a slightly open fan. A large part of the wing centre section and left wing, which had lost their front sections, were found 90 m from the site of impact: the tail was about 40 m away, with the other leg of the landing gear near it; a section of the fuselage was found about 50 m away, rather to one side of the line of the remaining wreckage, and smaller fragments were recovered up to a distance of 150 m from the site of the impact.

1.13 Fire

There was no evidence of fire either in flight or following impact, except on the tip of the left aileron. The origin of that limited fire was not ascertained.

1.14 Survival aspects

Some safety belts were found fastened, loose or broken. The emergency exits were still locked.

1.15 Tests and research

No information was contained in the report.

2.- Analysis and Conclusions

2.1 Analysis

The various parts of the wreckage were so badly destroyed that no valid conclusions could be drawn from their examination.

According to the testimony of various witnesses located between 600 m and the site of the accident, the aircraft was seen at first flying in a westerly direction at low altitude. Some witnesses saw the aircraft more than once as if it was circling above the area.

It was believed that the aircraft struck the ground at an angle of approximately 90° because the distance between a house which was damaged in the accident and the slope on which the accident took place was only 4 to 5 m. This belief was based on the fact that at a smaller angle the left wing would have destroyed the house and even if it was assumed that the left wing had merely grazed the roof of the house at an angle of 45°, then the aircraft would have inevitably collided with an electric mast located on one end of the roof.

2.2 Conclusions

The crew were properly certificated.

The aircraft's certificate of airworthiness was valid at the time of the accident.

The aircraft took off in advance atmospheric conditions. A front passed over Tenerife Airport between 1750 and 1850 hours. At Tenerife Airport winds of 30 to 40 kt were registered at altitudes below 1 500 m with a possibility of gusts of 45 kt and of associated turbulence in the area of the accident. Down-draughts were considered unlikely.

It was presumed that the aircraft hit the ground in a spin at an angle of approximately 90°.

Cause or Probable cause(s)

In the light of the investigation, the cause of this accident was considered to be unknown, and was, therefore, classified as "undetermined".

However, the reasons which may have caused the aircraft to enter a spin are listed hereunder:

One probable cause was a failure of the suction pump or the vacuum system. If the vacuum system had failed the artificial horizon, directional gyro and turn-and-bank indicator would have become inoperative. A failure of this sort, aggravated by turbulence, would deprive the pilot of the means to control the aircraft which, in these conditions, might have stalled one or more times.

Another cause which might have produced a spin was flying into very severe turbulence with loss of control leading to a stall.

Engine failure was not considered probable, although a malfunctioning of one of the propellers was not ruled out. It was considered that the pilot would have alerted the tower if an emergency has occurred, whereas it was considered unlikely that he would have done so if the instruments failed or if he encountered severe turbulence, as in these circumstances his entire attention would have been concentrated on trying to restore the aircraft to a normal attitude.

3.- Recommendations

None were contained in the report.