No. 23

Douglas C-47, LV-ACQ, crashed at Río Chico Aerodrome, Santa Cruz Territory, Argentina, on 20 May 1955. Argentine Accident Investigation Report No. 494, released 17 November 1955.

Circumstances

The aircraft, a cargo plane, was attempting a night take-off on the last leg of a circuit begun two days earlier in Ezeiza, with stops at all aerodromes on the Atlantic seaboard. After a run of about 600 metres, it lifted in a gentle curve to the left but hit the ground again off the runway, skidding to the right. The impact broke the left landing gear strut and the aircraft came to rest after travelling a short distance. Fire broke out in the left engine nacelle and could not be put out because of the lack of adequate fire fighting equipment at the aerodrome. No injuries were sustained by the four crew members and one passenger on board at the time of the accident (approximately 0820 hours).

Investigation and Evidence

Weather conditions as shown in the official report were as follows:

> Sky with 6/8 alto-cumulus, pressure at runway level 1 000.8mbs., visibility 40 kilometres, temperature 3°C, dewpoint 2°C, wind from 70° at 16 knots.

The aircraft was operating with a weight of 10 268 kg, 1 332 kg below the company's maximum authorized take-off weight for this aerodrome. The load was properly distributed according to the specifications of the controller and the dispatcher. The runway in use was Runway 03, which is constructed of compacted earth, with a slightly uneven surface; it had been properly marked with kerosene flares.

The routine pre-take-off engine and equipment checks were made according to company regulations; they indicated normal operation, except for a slight overspeed of the left engine, which had been noted previously. Take-off was then started on clearance from the control tower, which is situated at one of the four aerodromes in the zone, and from which the operation was not visible.

The pilot-in-command, at the controls, began the manoeuvre from the intersection of the two runways, leaving unused about 100 metres of the runway in use; this was quite in order in view of the total length of the runway, the light load of the aircraft and the fact that the unused portion was a recent extension as yet incompletely surfaced. He noticed a tendency of the aircraft to veer to the left soon after accelerating the engines to take-off power, i.e. 48 inches intake pressure. Becoming airborne at too low a speed because of a surface bump, he found that the swing to the left increased to a point at which it could not be arrested with the rudder nor with the trimming tab.

Once airborne, the aircraft left the runway obliquely, inclining slightly to the left. When the pilot attempted to land within the limits of the aerodrome by reducing power in the right engine, the aircraft hit the ground with a violent lateral skid which caused the left strut of the landing gear to break, the left engine was torn from its mount, and fire broke out. The aircraft travelled 96 metres from the first point of impact till it came to rest at an angle of about 120° left of its original heading.

The investigation revealed the following factors:

1) The weather was fine; wind speed and direction estimated by witnesses as north to north-east from 7 to 28 km/h differ from the official report, which gives north-east at 40 km/h. In neither case, however, could the wind have anything to do with the tendency of the aircraft to swing sideways.

2) The safety lock of the main landing gear struts was on and the tail wheel was in longitudinal alignment and locked in normal position.

3) The rudder tab was found in the position in which the pilot stated he had placed it.

4) Both propellers were torn from the engines and were found some distance away.

a) No. 2 propeller broke free, and it is considered, taking into account the twisting of the blades, that it hit the ground, partly breaking the front housing, and was then shaken off by vibration. The blades of this propeller were within the normal pitch positions.

b) The blades of No. 1 propeller were on feathered pitch, only one being twisted backwards, probably from having supported the weight of the aircraft. Two of the blades bore the marks of twisting starting at the propeller hub, probably due to rearward pressure; it was inferred that this occurred when they hit the ground while feathered.

Tests carried out on the governor and on the propeller itself showed no operating defects, except for some looseness of the speed stop lug of the governor, which would have resulted in a speed greater than normal, and this factor, in operation, would have facilitated the correction attempted by the pilot.

5) A number of parts of No. 1 engine were fused together by the fire, so that it was impossible to check its feed, carburation and igniting systems; however, the inspection revealed nothing abnormal in the remaining elements.

6) The electric circuit controlling the feathered pitch of the propellers could not be checked, as it was completely destroyed in the fire.

Analysis focuses attention on the left propeller blades, which were folded back in a manner suggesting that they were feathered when they touched the ground. For undetermined reasons, the propeller appears to have been feathered during the take-off manoeuvre; this would explain the tendency of the aircraft to pull to the left because of asymmetrical traction. In accidentally becoming airborne too soon, it did not have sufficient lift to be controlled, hence the consequences set out above.

Probable Cause

The probable cause of this accident was the fall of the aircraft when the pilot decided to discontinue a take-off which he considered abnormal and which is attributed to the fact that the propeller was probably feathered, for undetermined reasons.

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