

No. 10

Halcon Airways, Curtiss, C-46 F, LV-GLE, crashed into the Atlantic near the coast of Rawson, Chubut Province, Argentina, on 17 August 1966. Report published in March 1968 by the National Directorate of Civil Aviation, Argentina

1. - Investigation1.1 History of the flight

The aircraft was on a cargo flight from Rio Grande (Tierra del Fuego) to Ezeiza Airport, with an intermediate stop at Rio Gallegos (Santa Cruz). An IFR flight plan was filed for an off-airway overwater flight directly from Rio Gallegos to Ezeiza.

The pilot-in-command stated that at 1700 hours and shortly after passing abeam of Comodoro Rivadavia he noticed that the No. 1 engine oil was low, the indicator reading approximately 23 US gallons. It should be pointed out that, although the pilot testified to being already beyond Comodoro Rivadavia at 1700 hours, he in fact reported abeam of that position to control tower of Comodoro Rivadavia Airport at 1720 hours.

Thinking that the instrument might not be functioning correctly, he checked it while the mechanic looked out of the window but saw no signs of leakage. The check revealed that the engine was consuming a gallon of oil every 15 minutes. Temperature and pressure were normal. Under the circumstances, he decided to land at Trelew for an engine check and oil refill, his calculations having indicated that he would lose four gallons in the process and still have 17 remaining on landing. Meanwhile, the mechanic, who was still watching the engine, noticed oil flames which confirmed the leakage of oil.

The pilot believed that he would sight Trelew before nightfall, but that he would have to make a night landing. After a few minutes the low oil pressure warning light for No. 2 engine came on, simultaneously the temperature rose and the pressure indicator oscillated, so he gave orders to stop the engine and feather the propeller. It was then 1735 hours and he was flying visually, having passed through the cloud layer over the area. The sun was no longer visible. He decided that there was no other alternative but to continue towards Trelew and then to find a landing strip, and at 2 700 m started to descend in order to cool No. 1 engine which had heated to 110° on account of the greater power combined with slower speed. He descended gradually to 1 200 m to cool the engine as much as possible. He then gave orders to restart No. 2 engine, which was done, but it seized. He again had it stopped and the propeller feathered, and at this juncture considered the situation extremely serious since owing to height and speed loss he would reach Trelew after 1835 hours.

At 450 m after calculating the cargo and fuel weight, the pilot ordered the greatest possible amount of cargo to be jettisoned and some 1 200 kg were thrown out. At 300 m he decided to make for the coast and try to ditch in the sea with only the port engine operating. The night was very dark and the shore, which lay to the north, could not be seen distinctly. Visibility was better towards the south. After heading out over the sea and making a 270° turn to the left, he decided, as the aircraft descended, to come down parallel to the coast as close to it as possible taking care not to approach too close to

avoid hitting any rocks. The passengers were briefed for the emergency and a door was left open, since at the moment of impact both the co-pilot and engineer would be occupied in cutting the battery, generators, magnetos, fuel cocks and operating the landing gear.

With the lights extended and turned on, the pilot was able to see the water but not judge his height. When the altimeter registered zero, he started to draw back the control column and cut out the one operating engine until he realized the aircraft had hit the water. It travelled forward some 200 m, veered round to the right and came to a stop. It hit some rocks in the process losing the port engine, and other serious damage was caused by the uneven rocky bottom. The time was about 1830 hours and, according to the relevant tables, it had been completely dark since 1811 hours. The aircraft's position was 65° 18' W, 43° 52' S. After ascertaining that no one had been injured, the 5-seat life raft was inflated. Owing to the lack of adequate life-saving equipment for everyone, the occupants of the aircraft reached the shore with the greatest difficulty, some in the life raft, others clinging to the sides. The engineer took an oxygen flask, jumped into the sea and disappeared from sight dragged down by the current, and in the darkness he could not be found. The cabin attendant and one passenger, who had decided to remain on top of the aircraft, left it when the tide fell enough for them to walk to shore.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal			
Non-fatal			
None	4*	12	

1.3 Damage to aircraft

Damage to the aircraft and powerplant was estimated at 90% resulting from impact and subsequent immersion.

1.4 Other damage

The aircraft's cargo of hides and wool was a total loss.

1.5 Crew information

The pilot-in-command, aged 44, held a senior commercial pilot's licence and a night and instrument flight rating for several aircraft types. He had 8 000 hours total flying experience, including 1 200 hours on this particular type.

The co-pilot, aged 41, held a commercial pilot's licence with night and instrument flight rating. He had 4 000 hours total flying experience, including 900 hours on this particular type.

The mechanic for the flight had no licence or rating of any kind.

* One crew member disappeared while trying to swim to shore.

The fourth crew member, aged 39, was in charge of the cargo.

1.6 Aircraft information

The certificate of airworthiness was valid until 15 August 1967. Of the 24 589 total hours of operation, 7 340 hours had been flown since the last mandatory overhaul.

The specifications on operating limitations indicated that the aircraft was approved for commercial flights and authorized for night instrument and cargo flights with the following maximum weights:

Take-off: 21 773 kg
Landing: 21 228 kg with 5 244 litres and 300 litres of oil
Weight empty: 13 220 kg
Payload: 8 553 kg

The aircraft was being flown within operating limitations, i.e. load and centre of gravity were within prescribed limits.

The aircraft's take-off weight had been 21 525 kg and there was sufficient fuel (130 octane) for the flight.

1.7 Meteorological information

Weather had no bearing on the accident.

1.8 Aids to navigation

The aircraft had the standard aids for off-airway instrument flight.

1.9 Communications

Communications proceeded normally up to the moment of the accident with the aircraft reporting the difficulties encountered.

1.10 Aerodrome and ground facilities

Not relevant.

1.11 Flight recorders

The aircraft did not carry any flight recorder.

1.12 Wreckage

The ditching was effected only 90 m from shore, at a spot where the difference between high and low tide was very great. As the aircraft moved through the water in the course of the ditching, the rocks on the sea bed tore away No. 1 engine. The second engine broke away later as a result of wave action. The airframe was only slightly damaged by the accident but the action of the sea destroyed it completely.

1.13 Fire

None broke out.

1.14 Survival aspects

When the aircraft stopped moving along the water, crew and passenger evacuation proceeded by the main and emergency exits. The aircraft was immediately abandoned, some of its occupants reaching shore in a 5-seat life raft, others hanging on to the sides or swimming. Two persons who remained atop the aircraft till the tide fell walked to shore. As already stated, the acting flight engineer was lost in the darkness, dragged down by the current.

At daybreak rescue aeroplanes arrived and dropped clothing, medical supplies and food. Later on rescue patrols arrived overland and took the survivors to Trelew.

1.15 Tests and research

The powerplant could not be examined since it could not be recovered from the sea. Both engines had been torn away, the port engine during ditching, the starboard subsequently by the action of the waves. It was therefore impossible to pinpoint the source of the engine malfunction reported by the crew, although it may be stated that the aircraft was not operating normally since, with the load carried, there should have been no difficulty in continuing the flight with one engine inoperative.

2. - Analysis and Conclusions

2.1 Analysis

The enquiry revealed that from the very beginning of the flight an excessive oil consumption had been observed calling for special attention because, as No. 1 engine was consuming 24 402 litres an hour, in 3 hours and 6 minutes (2 hours flying plus 1 estimated hour and 6 minutes to reach Trelew) 76 206 litres would have been used up leaving approximately 58 litres out of a total tank capacity of 135 litres, in other words, very close to the 56 370 litres reserve limit prescribed in the maintenance manual.

Add to this the fact that it subsequently became necessary to stop No. 2 engine and continue with only one engine operative, and therefore instead of 300 km/h with the oil available, speed would have been limited to 203 km/h because of the lower flying speed laid down in Flight Manual AN-01-251A. In these conditions, the flying time would not be the 3 hours and 6 minutes calculated by the pilot but approximately 30 minutes more, which was why landing at Trelew would have meant going below permissible oil limits.

The No. 1 engine had already been consuming an abnormal amount of oil the previous day on the outward flight, as evident from the refuelling carried out at Comodoro Rivadavia and Rio Gallegos. In view of this, the pilot should not have planned a direct flight, since the off-airway route selected passes 180 km from Comodoro Rivadavia. Analysis of events reveals this to have been hazardous when flying over water so far out from land with the above-mentioned abnormality in the one engine, not rectified and aggravated by the in-flight oil leakage.

Furthermore, the pilot overlooked the fact that the survival equipment carried was inadequate for all occupants of the aircraft, namely 12 passengers and 4 crew members.

Furthermore, the pilot overlooked the fact that the survival equipment carried was inadequate for all occupants of the aircraft, namely 12 passengers and 4 crew members. There was only one rubber dinghy, with room for 5 persons. In view of this the flight should, for reasons of safety, have followed an overland route.

Since neither engine was functioning properly when he was flying at 2 700 m, and since with one engine overheated and the propeller of No. 2 engine feathered he was obliged to descend from 2 700 m to cool No. 1 engine, and since he was unable to restart No. 2 engine which showed signs of seizing, and furthermore since he had to jettison the cargo in an attempt to remedy the situation and was visibly losing altitude, the pilot should then have realized that he could not reach Trelew. Since he still had sufficient daylight and sufficient height at that time, he should have attempted a precautionary landing at any of the many suitable - or more suitable - landing strips along the Camarones-Trelew route instead of continuing beyond nightfall and having to ditch.

2.2 Conclusions

(a) Findings

The pilot and co-pilot held valid licences, and had considerable flight experience including experience on the subject aircraft. They were thoroughly familiar with the route flown.

The aircraft documentation was in order, and the load had been properly distributed and was within the specified limits even with the 12 passengers carried on board.

The weather conditions had no bearing on the accident.

The pilot's action in planning the flight and in continuing it in the above-described circumstances was deficient and imprudent. He was carrying passengers in a cargo aircraft in defiance of existing regulations and in spite of the notification of such prohibition by the airline. This breach of regulations was further aggravated by the fact that a person without proper licence had been permitted to act as mechanic on board. For this latter infraction, the airline owning the aircraft should also be held responsible.

(b) Cause or Probable cause(s)

Decision to continue a flight with both engines impaired until ditching at night became inevitable, instead of making an emergency daytime landing on any of the various runways in the area at a time when the situation made it clear that this operation was inevitable.

Non-scheduled domestic En route Emergency conditions - forced landing on water Pilot - improper in-flight planning
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