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ATSB TRANSPORT SAFETY REPORT
Aviation Occurrence Investigation AO-2010-067
Final

Ditching, VH-LMT
46 km north-east of Gurney, Papua New Guinea
26 September 2010

Abstract

At about 0935 Papua New Guinea local time on 26 September 2010, a Cessna Company T210L aircraft, registered VH-LMT, was being operated on a private, visual flight rules, flight from Tufi to Gurney, Papua New Guinea with the pilot and four passengers on board. When the aircraft was about 46 km north-east of Gurney, the engine lost power and the pilot conducted a ditching into shallow water adjacent to a beach. The aircraft was reported to have sustained minor damage and none of the occupants were injured.

The Papua New Guinea Accident Investigation Commission delegated the conduct of the investigation to the Australian Transport Safety Bureau (ATSB) in accordance with International Civil Aviation Organization Annex 13 paragraph 5.1.

The ATSB did not conduct an on-site investigation into the occurrence and the aircraft was not salvaged due to the remote location and limited access to salvage resources. As a result, the evidence available was limited and precluded determination of the factor(s) related to the power loss.

FACTUAL INFORMATION

At about 0935 Papua New Guinea local time[1] on 26 September 2010, a Cessna Company T210L aircraft, registered VH-LMT (LMT), was being operated on a private visual flight rules flight from Tufi to Gurney, Papua New Guinea with the pilot and four passengers on board. When the aircraft was about 46 km north-east of Gurney, the engine lost power and the pilot conducted a ditching into shallow water adjacent to a beach.

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The pilot advised that the aircraft had departed Australia on 6 September 2010 and had flown via Norfolk Island, New Caledonia and Honiara before arriving at Tokua, New Britain on 19 September. The aircraft was reported to have functioned normally during that period, which involved 21.7 hours flight time.

The aircraft was refuelled to full tanks (336 L) at Tokua. On 21 September, the pilot conducted a 1 hour flight to Kavieng, New Ireland. On 23 September, the pilot flew the aircraft to Tufi Dive Resort (2.7 hours flight time).

1 The 24-hour clock is used in this report to describe the local time of day, Papua New Guinea local time, as particular events occurred. Papua New Guinea local time was Coordinated Universal Time (UTC) +10 hours.

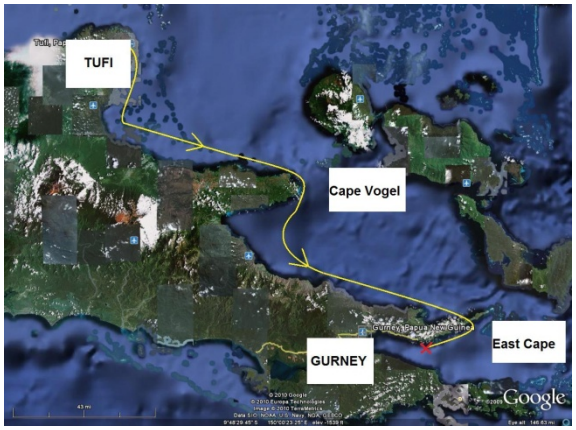
On 26 September, the pilot planned to fly from Tufi to Gurney, a straight line distance of 99 NM (183 km) (Figure 1 shows the approximate track flown). The pilot reported dipping both fuel tanks and determining that there were 120 L on board, with about 100 L in the left tank. The validity of that total was verified by the engine data monitoring (EDM) system[2] that was fitted to the aircraft, and by the consistency with the fuel usage rate of about 55 L/hour that the engine had been achieving since the aircraft departed Australia.

The pilot recalled that the engine checked and performed normally during the takeoff from Tufi. The estimated flight time was 41 minutes. The pilot tracked via the coast at 1,000 ft above mean sea level (AMSL) and, in line with his normal practice, set cruise power at 27.5 inches manifold pressure and 2,200 RPM, and the mixture to 50 °F lean of peak. Fuel was being fed from the left tank.

About 20 minutes into the flight, when the aircraft was near Cape Vogel, the pilot noticed a subtle change in engine noise that was described as 'mild rough running'. The pilot checked the EDM and observed that two cylinders (the pilot could not recall which ones) were displaying low cylinder head temperatures and high exhaust gas temperatures. The pilot advanced the mixture control by between one half and three quarters of a turn and the rough running ceased.

North of and abeam Gurney, low cloud precluded tracking direct to Gurney, so the pilot elected to continue following the coast towards East Cape at about 1,000 ft until it was safe to cross to the southern side of the peninsula. The pilot was able to turn towards Gurney at a position about 10 km west of East Cape. As the aircraft was tracking west along the southern side of the peninsula, the engine again began to run roughly. The pilot recalled that he activated the electric fuel pump and selected the right tank. Engine operation returned briefly before faltering again. The pilot selected the left tank and the engine surged briefly before sustaining a total power loss. The pilot recalled that the aircraft was at about 600 ft AMSL at that time. The pilot transmitted an abbreviated distress message and told the passengers to prepare for ditching.

Figure 1: Track from Tufi to ditching location (x)



The pilot reported that there was no noise or other indication that there had been a mechanical failure within the engine.

The pilot turned the aircraft into wind and, with full flap selected and the aircraft's landing gear retracted, touched down tail first at about 40 kts. The pilot described the rate of deceleration as 'gentle'. He had earlier instructed the passenger who was seated in the right front seat to open his door prior to impact. All occupants were able to quickly exit the aircraft. There were no injuries and the aircraft settled in about 1 m of water with little evidence of impact damage apparent.

Approximately 1 week after the occurrence, the pilot advised that arrangements to recover the aircraft from the water had been unsuccessful and that the engine, avionics, instruments and most of the airframe had been exposed to salt water during that period. The pilot also advised that there appeared little future prospect of the aircraft being salvaged.

2 The EDM system allowed the pilot to simultaneously monitor exhaust gas temperature and cylinder head temperature on individual cylinders. That information was displayed on a bar graph and digital numeric display in the cockpit. The system also monitored fuel flow and fuel contents.

Figure 2: LMT after the ditching

Pilot information

The owner-pilot held a Commercial Pilot Licence and a Class 1 Medical Certificate. The pilot had about 2,000 hours flying experience, with 1,200 of those as pilot in command of LMT. He had flown exclusively in LMT since its acquisition in 1999.

Aircraft information and history

The aircraft was operating on a valid maintenance release at the time of the occurrence. There were no outstanding maintenance items relevant to the occurrence.

The pilot advised of a similar rough running event in LMT on 9 July 2010. In that instance, the pilot was able to control the rough running by adjusting the fuel/air mixture. Subsequent maintenance examination revealed a partially blocked fuel injector.

ANALYSIS

Calculations based on the pilot's advice that the aircraft was refuelled to full tanks at Tokua, and on his reported flight times from:

- Tokua to Kavieng
- Kavieng to Tufi
- Tufi to the ditching location

indicated that there should have been about 70 L on board the aircraft at the time of the power loss. On that basis, fuel exhaustion was unlikely to have contributed to the occurrence. The pilot's action of changing fuel tanks and operating the electrical fuel pump to initially successfully re-start the engine indicated that fuel starvation was also unlikely to have been a factor.

Without access to the aircraft, further investigation into the factor(s) related to the power loss was not possible. The prolonged exposure of the aircraft to salt water was likely to have limited the value of any subsequent examination of the engine and its ancillary systems.

FINDINGS

Contributing safety factors

- For reason(s) that could not be determined, the engine ceased operating during normal cruise flight.
- The weather affecting the flight meant that the flight was conducted at an altitude that limited the time available to the pilot to troubleshoot the problem.

SOURCES AND SUBMISSIONS

Sources of Information

The sources of information during the investigation included:

- the aircraft owner-pilot
- Google Earth imagery.

Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003* (the Act), the Australian Transport Safety Bureau (ATSB) may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the aircraft owner-pilot, the Papua New Guinea Accident Investigation Commission and the Civil Aviation Safety Authority.

There were no submissions received from any of those parties.