Interim Factual Report - N254F Beechcraft Baron Accident, Tasman Sea, SW of Raglan, New Zealand - 30 March 2013

This Interim Factual Report is based on initial information that may be subject to change as the safety investigation is progressed.

Abstract

At around 1147 hours New Zealand Daylight Time[1] on 30 March 2013, N254F a USA registered Beechcraft Baron aircraft, took off from Ardmore Aerodrome on a private IFR[2] flight to Timaru with two people on board.

After approximately 29 minutes the aircraft reached its cruise altitude of Flight Level[3] 180 (approx. 18,000 feet). About one minute into the cruise, analysis of the radar plots[4] indicates that the aircraft's groundspeed decreased and it then began a high rate of descent. Approximately one and a half minutes later, the aircraft disappeared from radar coverage. In transmissions to Air Traffic Control the pilot indicated that he had an emergency and was experiencing problems with both engines.

Later that day, search and rescue personnel located parts of aircraft wreckage floating on the ocean surface.

The New Zealand Navy located the main aircraft wreckage on the seabed at a depth of approximately 59 metres. On 6 April 2013, Navy divers located and retrieved the body of the passenger. The following day the aircraft wreckage and the pilot's body were recovered by the Navy onto its specialist dive vessel, the HMNZS Manawanui.

Aircraft information

N254F, a Beechcraft Baron G58, was manufactured in the USA in 2006. The aircraft was powered by two Continental IO-550-C piston engines fitted with a turbo normalising system, which drove three-bladed Hartzell propellers. The aircraft had seating for six people and utilised a Garmin 1000 avionics suite. Although unpressurised it did have an oxygen breathing system fitted for use at higher altitudes.

The aircraft was imported from the USA by the pilot and arrived in New Zealand in October 2009, retaining its American registration. The aircraft operated in New Zealand under FAA[5] Airworthiness Regulations and New Zealand's civil aviation operational rules.

Pilot information

The pilot held a FAA Pilot Certificate, which was issued in December 2005, and a FAA Pilot Medical Certificate.

1 The 24 hour clock is used in this report to describe the local time of day, New Zealand Daylight Saving Time (NZDT), when particular events occurred. NZDT is Co-ordinated Universal Time (UTC) plus 13 hours.

2 IFR: Instrument Flight Rules.

3 Flight Level: An altitude above sea level, referenced to standard barometric pressure.

4 Radar plots provided by Airways New Zealand.

5 FAA: Federal Aviation Administration.

The pilot also held a New Zealand Private Pilot Licence, which was issued in December 2009 and he held a valid New Zealand Medical Certificate.

Final known flight events

The day before the accident the aircraft received two separate fuel uplifts totalling approximately 360 litres of aviation gasoline.

On the day of the accident, the pilot filed an IFR flight plan showing his intention to depart from Ardmore Aerodrome and fly to Timaru Aerodrome at Flight Level 180, with two people on board.

The aircraft duly departed Ardmore Aerodrome climbing to Flight Level 180. During the climb, which took approximately 29 minutes, the Air Traffic Controller re-routed the aircraft, for sequencing purposes, from its position to overhead New Plymouth Aerodrome.

Radar plots indicate that approximately one minute into the cruise the groundspeed of the aircraft decreased, and it then began a high rate of descent. Approximately one and a half minutes later the aircraft disappeared from radar coverage. Initial analysis of the radar plots indicates that, during the descent, the aircraft exhibited a very rapid vertical descent with little forward horizontal momentum.

In transmissions to Air Traffic Control, during the accident sequence, the pilot indicated that he had an emergency and was experiencing problems with both engines.

Injuries to persons

The pilot and passenger received fatal injuries.

Weather conditions

On the day of the accident, an anticyclone east of New Zealand of New Zealand extended a ridge of high pressure over the North Island. A small depression west of the South Island was moving slowly east, and its associated cold front over the eastern Tasman Sea was moving towards the North Island.

A report produced by the MetService of New Zealand stated that in the general area of the accident the wind was from the north to northwest around 15 knots at 18,000ft to less than 10 knots at sea level. The report concluded that 'the aircraft was in cloud at 18,000 ft when it was West of Raglan about the time of the accident.'

Wreckage and impact information

Video footage taken by search and rescue personnel shows a moderate fuel/oil slick, and several pieces of aircraft debris in the general location where the aircraft is thought to have impacted the water.

The aircraft was located largely intact in 59 metres of water on the ocean floor. Based on photographic imagery taken at the time of the recovery it was evident that the aircraft had come to rest in an inverted position. A moderate amount of hydrodynamic deformation to the underside of the aircraft structure was evident.

Once recovered, initial examination of the wreckage indicated that the aircraft had impacted the water with a slight nose down attitude its wings almost level and with a slight yawing[6] movement.

Examination of the aircraft's propellers indicated that the propellers were under little or no power at the time the aircraft impacted the water. The propeller angles were in a position usually associated with a cruise setting. Neither propeller was feathered[7].

Examination of the flight controls and control surfaces showed that the flap and gear selectors were in the fully retracted position. Aileron and rudder trim were in a near neutral position, however, the elevator trim was trimmed 21 units nose up.

The pilot's body was located in the front left seat of the aircraft. The passenger's body was removed from the aircraft while it was on the sea floor, from the rear right-hand seat.

On-going investigation activities

The investigation is continuing and will include further examination and analysis of a number of areas including:

- Technical and maintenance history associated with the aircraft
- The pilot's background and experience.
- Analysis of Air Traffic Controller voice recording.
- Weight and balance calculations.
- Flight aerodynamics.
- Regulations relating to foreign aircraft permanently operating in New Zealand.
- As a USA registered aircraft the CAA have been liaising with the NTSB[8] and FAA and will continue to do so.

Immediate safety lessons

At this stage the safety investigation has not identified any immediate safety lessons.

The CAA safety investigation is being conducted in accordance with the New Zealand Civil Aviation Act. The objective of the safety investigation is the prevention of accidents by determining the contributing factors or causes and establishing what lessons can be taken for the improvement of the NZ aviation system.

The focus of the investigation is to establish the cause of the accident on the balance of probability. Safety investigations do not always identify one dominant or 'proximate' cause. Often, an aviation accident is the last event in a chain of several events or factors, each of which may contribute to a greater or lesser degree, to the final outcome.

If any person has information which may assist with the safety investigation of this accident then they may contact the Civil Aviation Authority of New Zealand at isi@caa.govt.nz

6 Yaw: The left or right movement of the aircraft nose, about its yaw axis of rotation.

7 Feathered Propeller: A propeller which has its blades rotated so that the leading and trailing edges are nearly parallel with the aircraft flight path.

8 National Transport Safety Bureau.