Australian Government
Australian Transport Safety Bureau

Publication Date: Month 2009 ISBN 978-1-921602-28-3

ATSB TRANSPORT SAFETY REPORT
Aviation Occurrence Investigation AO-2008-084
Preliminary

Collision with terrain, VH-IGT, PZL-M18A (Dromader), 58 km SW of Nyngan, NSW

29 December 2008

Australian Transport Safety Bureau
PO Box 967, Civic Square ACT 2608
Australia
1800 020 616
+61 2 6247 4150 from overseas
www.atsb.gov.au

INFRA-08440

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Abstract

At about 1145 Eastern Daylight-saving Time, the pilot of a PZL-M18A Dromader aircraft, registered VH-IGT, took off from a road on a property 58 km south-west of Nyngan, NSW. About 10 minutes later, the outboard section of the right wing separated from the aircraft and the aircraft impacted the ground. The pilot, who was the sole occupant, was fatally injured.

FACTUAL INFORMATION

The information contained in this preliminary report is derived from the initial investigation of the occurrence. Readers are cautioned that there is the possibility that new evidence may become available that alters the circumstances as depicted in this report.

History of flight

At about 1145 Eastern Daylight-saving Time[1], the pilot of a PZL-M18A Dromader aircraft, registered VH-IGT, took off from a road on a property 58 km south-west of Nyngan, NSW, to conduct agricultural spraying operations.

Approximately 10 minutes later, two witnesses saw the aircraft fly over the area of a homestead in a north-north-westerly direction. Both witnesses reported seeing the right wing 'flapping'. One of the witnesses saw something fall off the aircraft. She then saw the aircraft rolling and impact the ground. The pilot, who was the sole occupant, was fatally injured.

Recorded data

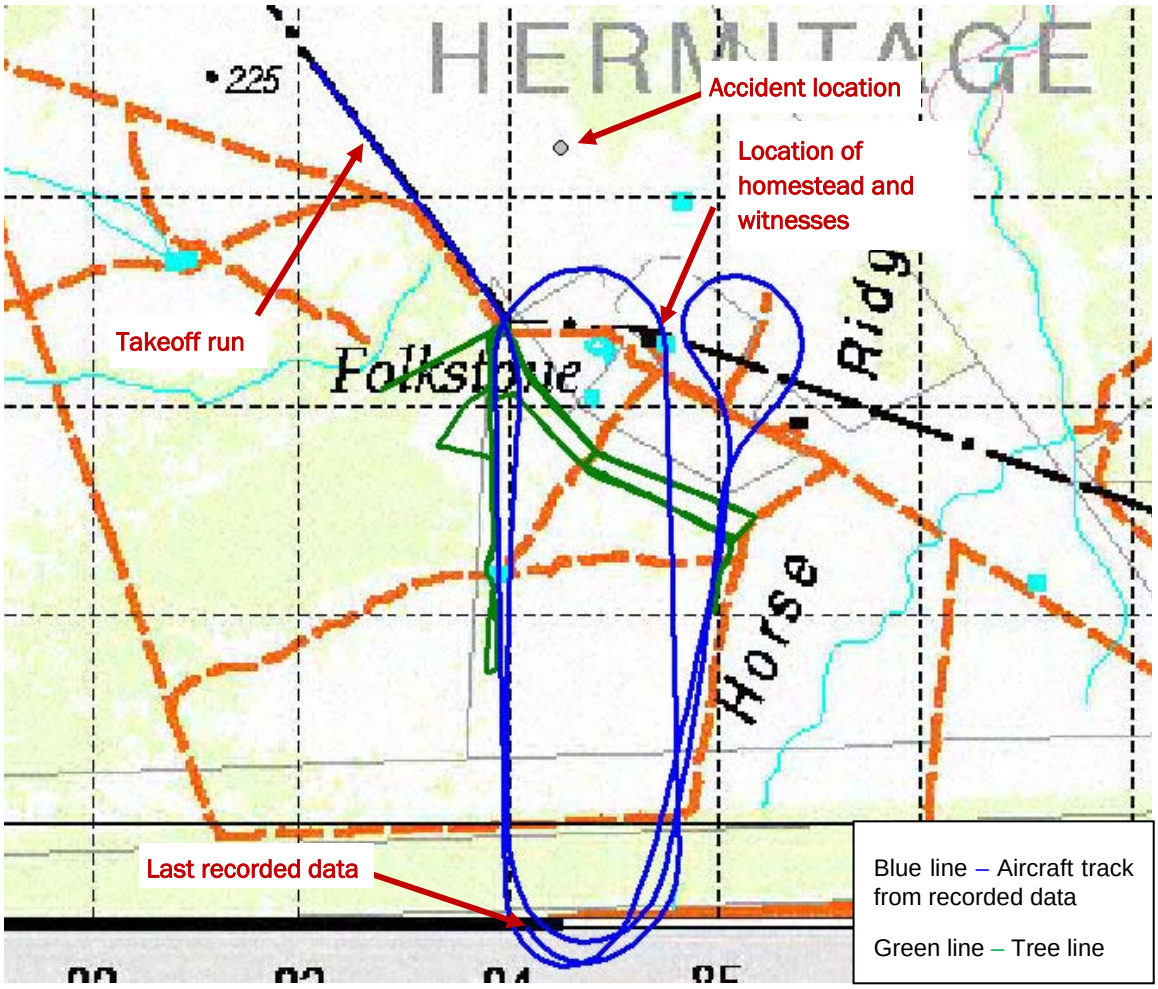
The aircraft was fitted with an electronic system to assist in and record the agricultural spraying. . The system recorded the aircraft's location and altitude approximately every 1.5 seconds. The recorded data was downloaded by the Australian Transport Safety Bureau (ATSB) and showed the aircraft takeoff and survey of the paddock to be sprayed (Figure 1). The data was incomplete and stopped about 7 minutes after takeoff at the southern end of the paddock being sprayed and prior to the time of the accident.

Pilot information

The pilot held a Commercial Pilot (Aeroplane) Licence, issued in November 1990, and a grade 1 aerial agricultural rating, issued in March 1997. He held a valid Class 1 Civil Aviation Safety Authority (CASA) Aviation Medical Certificate. He was endorsed for the aircraft type and had a total aeronautical experience of about 6,500 flying hours, with about 3,000 flying hours on the aircraft type. He was qualified and licensed for aerial agricultural operations.

1 The 24-hour clock is used in this report to describe the local time of day, Eastern Daylight-saving Time (EDT), as particular events occurred. Eastern Daylight-saving Time was Coordinated Universal Time (UTC) + 11 hours.

Figure 1: Recorded aircraft track



In accordance with the requirements of the aircraft Flight Manual Supplement *207/403/FMS, PZL M18, Dromader Restricted Category STC – MTOW Increase*, the pilot had been assessed by the operator's Chief Pilot on 11 November 2008, as being competent to conduct operations in PZL M18(A) Dromader aeroplanes at weights above 5,300 kg.

Operational information

According to the operator's *Pilot Work Order*, the aircraft hopper load for the flight during which the accident occurred, was to consist of a 2,123 kg mix of herbicide chemicals and water.

The fuel load could not be conclusively determined. However, based on the operator's procedures, it is likely that the aircraft had between half and a full fuel load at the beginning of the flight. If the aircraft had a full fuel load, the take-off weight would have been about 5,370 kg.

CASA had issued an exemption to the operator to permit an increased maximum take-off weight to 6,600 kg.

Bureau of Meteorology reports for the Nyngan area indicated fine conditions, winds from the south-west at 12 kts and a maximum recorded temperature of about 35 degrees C.

Aircraft information

The aircraft was manufactured in Poland in 1987 and had been subsequently modified. One of the modifications, carried out in 2005, was the replacement of the original reciprocating (radial) engine and the 4-blade propeller with a Garrett TPE 331-11U-612G gas-turbine engine and a Hartzell 5-blade constant speed propeller. This was done in accordance with an approved Supplemental Type Certificate (STC), number SA09039SC.

The aircraft was first registered in Australia in July 2004 and registered to the current owner in June 2005. The aircraft was issued with a certificate of airworthiness in the restricted category[2] in November 2005. It had accumulated about 6,229 hours in service at the time of issue of the last maintenance release, on 12 December 2008. The aircraft total time in service was about 6,271.1 hours before the accident flight.

The most recent maintenance was a 300-hourly periodic inspection conducted on 12 December 2008. On 24 December 2008, bird strike damage to the right wing tip leading edge was repaired. The location of this repair was outboard of the location of wing separation.

Wreckage information

The wreckage trail extended for about 330 m in a north-easterly direction. The first items in the wreckage trail, prior to ground impact, were the outboard section of the right wing and items of debris from the hopper, the light bar and the canopy Perspex. The outboard section of the right wing was located approximately 100 m prior to the initial impact point of the main wreckage (Figure 2).

The tip of the remaining attached section of the right wing was the first point of the aircraft to impact the ground. The aircraft then impacted the ground in about a 30^0 nose-down attitude. The right wing then separated from the fuselage due to the impact forces. The fuselage and tail rotated to be facing a westerly direction (Figure 3).

The engine was located about 125 m from the initial impact point, in the direction of flight. Four of the five propeller blades had been released from the propeller hub. Two of the propeller blades were located 200 m from the impact crater and were the last pieces of the aircraft in the wreckage trail. The engine and propellers were examined and it was determined that the engine was delivering significant power at the time of the accident.

All flight controls were accounted for and the control system continuity was established.

The outboard section of the right wing had separated approximately 1.8 m from the tip. The location of the separation was between the tie-down hard point and the straps along the forward face of the main spar (Figures 4 and 5).

FURTHER INVESTIGATION

The investigation is continuing and will include:

- further analysis of the recorded data
- a review of the aircraft's maintenance history
- a review of records of modifications to the aircraft
- an appraisal of the effects on the aircraft structure under higher gross weight loads
- an analysis of the failure mode of the right wing.

2 For the purpose of agricultural and fire fighting operations.

Figure 2: Outboard section of right wing and main wreckage

Figure 3: Main wreckage

Figure 4: Reconstructed right wing

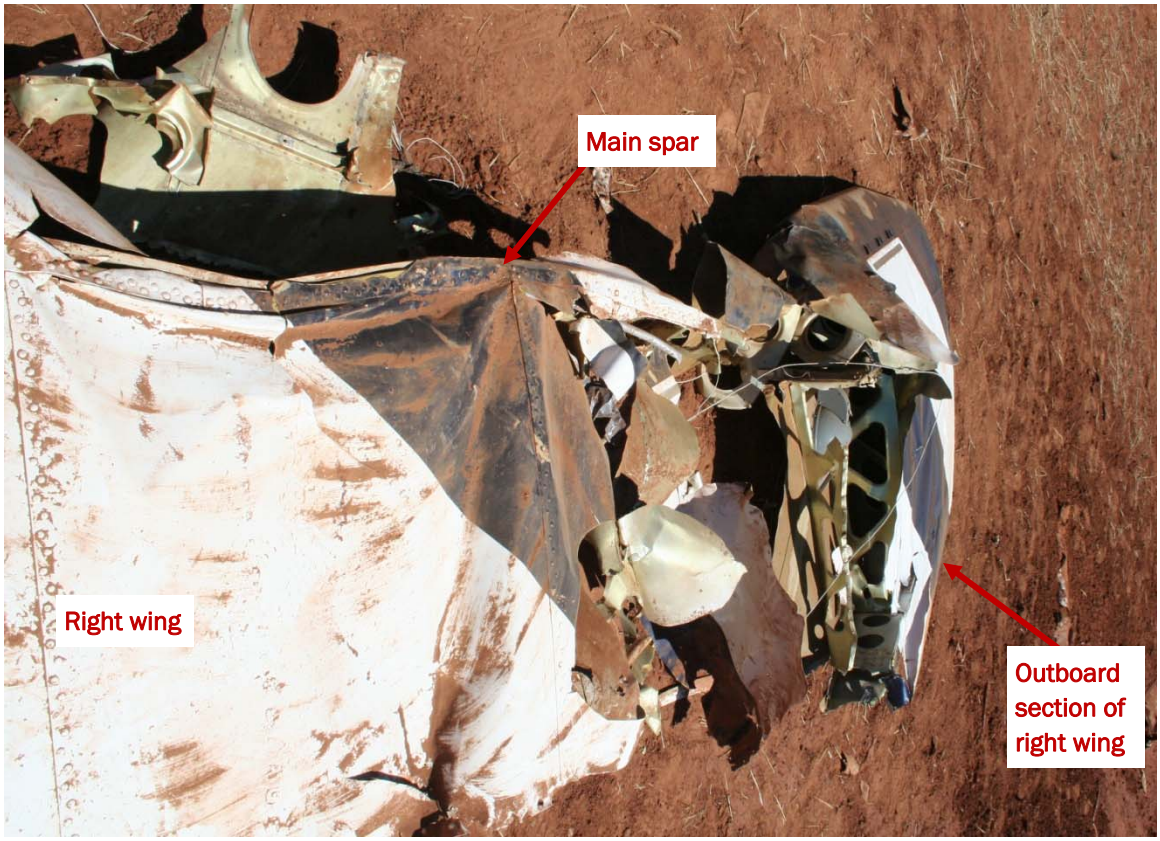


Figure 5: Two sections of the right wing main spar looking forward