Australian Government
Australian Transport Safety Bureau

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ATSB TRANSPORT SAFETY REPORT
Aviation Occurrence Investigation AO-2009-070
Preliminary

Collision with terrain 21 km SE of Kojonup, WA 17 November 2009

Abstract

At about 0800 Western Standard Time on 17 November 2009, the pilot of a Cessna Aircraft Company A188B Agwagon was fatally injured when his aircraft impacted terrain while conducting spraying operations near Kojonup, WA. The aircraft was destroyed.

The investigation is continuing.

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 the report.

History of the flight

Figure 1: VH-ZRR conducting spraying operations

On 16 November 2009, the pilot of a Cessna Aircraft Company A188B Agwagon aircraft, registered VH-ZRR (Figure 1), flew from the aircraft's base to a property about 12km east-south-east of Kojonup, WA and then completed almost 3.5 hours of spraying operations.

Immediately preceding the final flight of the day, the aircraft's hopper[1] was reloaded with 500 L of spray and the aircraft commenced spraying in a field adjacent to a property farmhouse. The pilot did not complete spraying the field due to concern that the prevailing wind conditions would cause the spray to drift towards the house. The pilot and his aircraft loader[2] terminated the operations for the day and returned home by vehicle that evening, with the intention of returning the next day to complete the job.

The pilot and aircraft loader departed home at 0530 Western Standard Time[3] on 17 November 2009 and arrived at the property at about 0700. The aircraft was refuelled by the aircraft loader while the pilot checked and changed some of the aircraft engine's spark plugs. The pilot then completed the pre-flight inspection of the aircraft and started the engine.

The pilot was reported to have warmed up the aircraft's engine for between 10 and 15 minutes, while also completing some engine checks and run-ups. The pilot then indicated to the aircraft loader that the aircraft was okay, closed the aircraft's door and took off to the north at 0758.

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1 On board storage tank for carriage of spray to the area to be sprayed.

2 The aircraft loader performed the duties of mixing the spray, loading the spray into the hopper, fuelling the aircraft, and acted as the safety watch for the aircraft.

3 The 24-hour clock is used in this report to describe the local time of day, Western Standard Time (WST), as particular events occurred. Western Standard Time was Coordinated Universal Time (UTC) + 8 hours.

The aircraft loader stated that, after takeoff, the pilot tracked towards the field that could not be finished the previous night. Witnesses reported that the pilot completed the first spray run along the field's northern fence-line in an east to west direction, before making a climbing left then right procedure turn[4] and re-establishing straight and level flight to the south-east. Those witnesses then observed the aircraft's 'left wing drop', in what was described as similar to when the aircraft was turning but, shortly thereafter, the nose of the aircraft 'dropped sharply'. The aircraft dived towards and was heard to impact the terrain at about 0800.

The witnesses did not see the aircraft impact the ground as their view was obstructed by terrain. However, a cloud of dust was observed in the area in which the aircraft disappeared from view. The witnesses stated that the aircraft's engine was operating during the straight and level flight, and that the intensity of the engine noise increased during the dive.

The pilot sustained fatal injuries and the aircraft was seriously damaged.

Aircraft information

The aircraft was manufactured in the United States in 1975 and was exported to South Africa in 1989, where it was used in agricultural operations. In 1996 the aircraft was burnt out, necessitating a major re-build. The aircraft also received a new engine type under a Supplemental Type Certificate.[5]

The aircraft was disassembled and exported to Australia in January 1999, before being reassembled and registered in June 1999 as VH-ZRR. The aircraft's details included:

Aircraft	
Manufacturer	Cessna Aircraft Co.
Model	A188B
Serial Number	18802103T
Aircraft total time in service (TTIS)	7,547.9 hours

Engine	
Manufacturer	Lycoming
Type	Piston, normally-aspirated
Model	IO-720-A1B
Serial Number	L-1092-54A

Propeller	
Manufacturer	Hartzell
Type	Variable pitch, constant speed
Model	HC-C3YR-1RF
Serial Number	DY 2453A
Blade type	F8475R

The aircraft was equipped for flight by day under the visual flight rules and the operational category was Aerial Work, Class B.

The aircraft's last 100-hourly inspection was certified on 1 September 2009 at 7,492.9 hours TTIS. The aircraft's maintenance release was valid until 7,592.9 hours TTIS, or 1 September 2010.

Recorded information

The aircraft was fitted with an electronic system to assist in, and record the conduct of any spraying operations. Every 2 seconds, the system recorded the local time, and the aircraft's position, altitude, heading and speed. This information was temporarily stored in an internal buffer, before being written at set intervals to the unit's non-volatile memory. The system was retrieved from the accident site by the Australian Transport Safety Bureau (ATSB) for technical examination.

The information that was recorded to the unit's non-volatile memory was recovered by the ATSB and showed that the aircraft departed from the property airstrip for the first spraying run at 0757:30. The recorded information ceased at 0758:30.

4 The manoeuvre used at the end of a spray run to reverse the direction of flight and align the aircraft for the next spray run in a reciprocal direction.

5 A Supplemental Type Certificate authorises the alteration of an aircraft, engine or other item operating under an approved type certificate.

Operational information

The aircraft was reported to have been fully fuelled prior to the first flight on 17 November 2009. The aircraft loader stated that the aircraft had about 300 L of spray on board on departure from the property airstrip.

The aircraft loader stated that the weather conditions that morning were fine, and estimated that the wind was from the west at between 5 and 10 kph. The Bureau of Meteorology (BoM) forecast that was issued at 0425 for the Great Southern Area[6] predicted the development of isolated showers in the morning, light to moderate winds from the south-south-west, and a maximum temperature in the Kojonup region of about 24 °C.

Wreckage information

The aircraft impacted the ground with a high rate of descent in a wings-level, and slightly nose-down attitude. As a result, both wing-mounted fuel cells burst and first responders to the accident noted that there was fuel present on the ground near the aircraft.

There was no evidence of any structural failure prior to the aircraft impacting the ground and there were indications that the aircraft's engine and propeller were developing power at the time of the accident.

Aircraft flight control cable continuity was established for all flight controls.

Further Investigation

The investigation is continuing and will include:

- further analysis of the available recorded data
- a review of the aircraft's maintenance history
- a review of the pilot's medical documentation, training and supervision.

6 The Great Southern Area was a general weather forecasting area that was used by the BoM and included Kojonup and its environs.