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Australian Transport Safety Bureau

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ATSB TRANSPORT SAFETY REPORT
Aviation Occurrence Investigation AO-2010-043
Preliminary

Collision with terrain, VH-PGW
6 km north-west of Bankstown Aerodrome, NSW
15 June 2010

Abstract

At about 0807 Eastern Standard Time on 15 June 2010 a Piper PA-31P-350 Mojave aircraft, registered VH-PGW, with a pilot and a flight nurse on board, collided with terrain in a suburban area about 6 km north-west of Bankstown Aerodrome, New South Wales. At the time of the accident, the pilot was attempting to return to Bankstown following a reported in-flight engine shutdown. Both occupants were fatally injured and the aircraft was destroyed by the impact forces and an intense post-impact fire.

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

On 15 June 2010, a Piper PA-31P-350 Mojave aircraft, registered VH-PGW (PGW), with a pilot and a flight nurse on board, was being operated under the instrument flight rules on a flight from Bankstown Aerodrome, New South Wales (NSW) to Archerfield Aerodrome, Queensland. The aircraft was being positioned at Archerfield for a medical patient transfer flight from Archerfield to Albury, NSW.

The following chronology of events leading up to the accident was constructed from preliminary information from recordings of radio communication between the pilot and air traffic control (ATC), recordings of radar data and post-accident witness interviews. The aircraft's position and altitude was derived from radar data and plotted on an extract of the Sydney Visual Terminal Chart (Figure 1).

- At about 0720 Eastern Standard Time[1], the aircraft was refuelled with 660 L of aviation gasoline (avgas) from a fuel tanker vehicle. The fuel uplift resulted in an estimated total fuel on board at engine start of 879 L, which was in excess of the fuel requirements for the flight to Archerfield.
- At 0740, the aircraft took off from runway 29 Centre (29C) at Bankstown Aerodrome.
- At 0749:39, ATC cleared the pilot to climb to 7,000 ft and 42 seconds later re-cleared the pilot to climb to 9,000 ft above mean sea level (AMSL)[2].
- At 0749:45, the aircraft overflew Richmond Aerodrome at 6,100 ft with a groundspeed of 174 kts.

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

2 All subsequent references to the aircrat's altitude are above mean sea level.

- At 0752:12, the aircraft stopped climbing when at 7,600 ft with a groundspeed of 155 kts and commenced descending about 13 seconds later. Soon after, the pilot reported to ATC that he was turning the aircraft around as he was having some problems. At that time, the aircraft was about 8 NM (15 km) north-east of Richmond Aerodrome at 7,400 ft in a left turn with a groundspeed of 145 kts. ATC instructed the pilot to maintain 5,000 ft and advised that Richmond was available if emergency conditions existed. The pilot then asked ATC to 'stand by'.
- At 0753:00, the aircraft was at 7,000 ft with a groundspeed of 143 kts.
- Soon after, ATC requested advice as to the nature of the problem. The pilot replied there was an engine issue, that he had just shut down one engine and he was returning to Bankstown. The controller cleared the pilot to track direct to Bankstown Aerodrome.
- A number of witnesses located in the Wilberforce and East Kurrajong area later reported that they observed the aircraft and heard a 'surging and roaring' engine noise with one engine 'revving then cutting out, then revving again'.
- At 0753:40, the aircraft was at 6,000 ft with a groundspeed of 141 kts.
- At 0754, ATC asked the pilot whether he would require any emergency services (fire brigade and ambulance) on arrival at Bankstown Aerodrome. The pilot replied that he was not sure at that moment.
- At 0754:35, the aircraft was about 5 NM (9 km) north of Richmond Aerodrome at 5,000 ft with a groundspeed of 163 kts.
- Soon after, ATC instructed the pilot to descend to 2,500 ft and advised that Richmond airport was two miles to the south of the aircraft if the pilot could not maintain height. The pilot advised that the aircraft was on a 'slow descent'. At this time, the aircraft was descending through 4,700 ft with a groundspeed of 163 kts.
- At 0756, ATC advised the pilot that the emergency services would be in attendance at Bankstown.
- At 0756:19, the aircraft was at 4,000 ft with a groundspeed of 143 kts.
- Soon after, the pilot requested advice as to the availability of runway 11C at Bankstown Aerodrome and ATC cleared the pilot for a direct track to runway 11C. The pilot requested heading guidance to Bankstown, which was provided by ATC. Soon after, ATC advised the pilot that the current heading being flown would take the aircraft about 10 NM (19 km) to the west of Bankstown Aerodrome and suggested that the pilot make a further left turn.
- At 0757:49, the aircraft was at 3,000 ft with a groundspeed of 143 kts.
- At 0758, ATC cleared the pilot to continue descent as required and asked if the aircraft was in visual conditions. The pilot replied that he was flying in visual conditions 'on top' (that is, there was a cloud layer below the aircraft).
- At 0759, ATC advised the pilot that there were no other aircraft being detected by ATC radar in the Prospect Reservoir area. At that time, the aircraft was about 6.5 NM (12 km) south of Richmond Aerodrome and about 16 NM (30 km) north-west of Bankstown Aerodrome, at 2,100 ft and a groundspeed of 137 kts.
- At 0759:39, the aircraft was at 2,000 ft with a groundspeed of 130 kts.
- At 0800, ATC instructed the pilot to contact Bankstown Tower ATC. The pilot contacted Bankstown ATC soon afterwards, advising that the aircraft was 12 miles (22 km) from Bankstown at 1,500 ft. ATC instructed the pilot to join a straight in approach for runway 11C and advised the pilot of the wind conditions at the aerodrome.
- At 0802:29, the aircraft was at 1,000 ft with a groundspeed of 112 kts.

- At 0803, the pilot asked ATC how many miles the aircraft was from Richmond. ATC advised that the aircraft was closer to Bankstown than Richmond. At that time, the aircraft was about 13 NM (24 km) south of Richmond Aerodrome and 9.5 NM (18 km) north-west of Bankstown Aerodrome.

Figure 1: Aircraft flight path

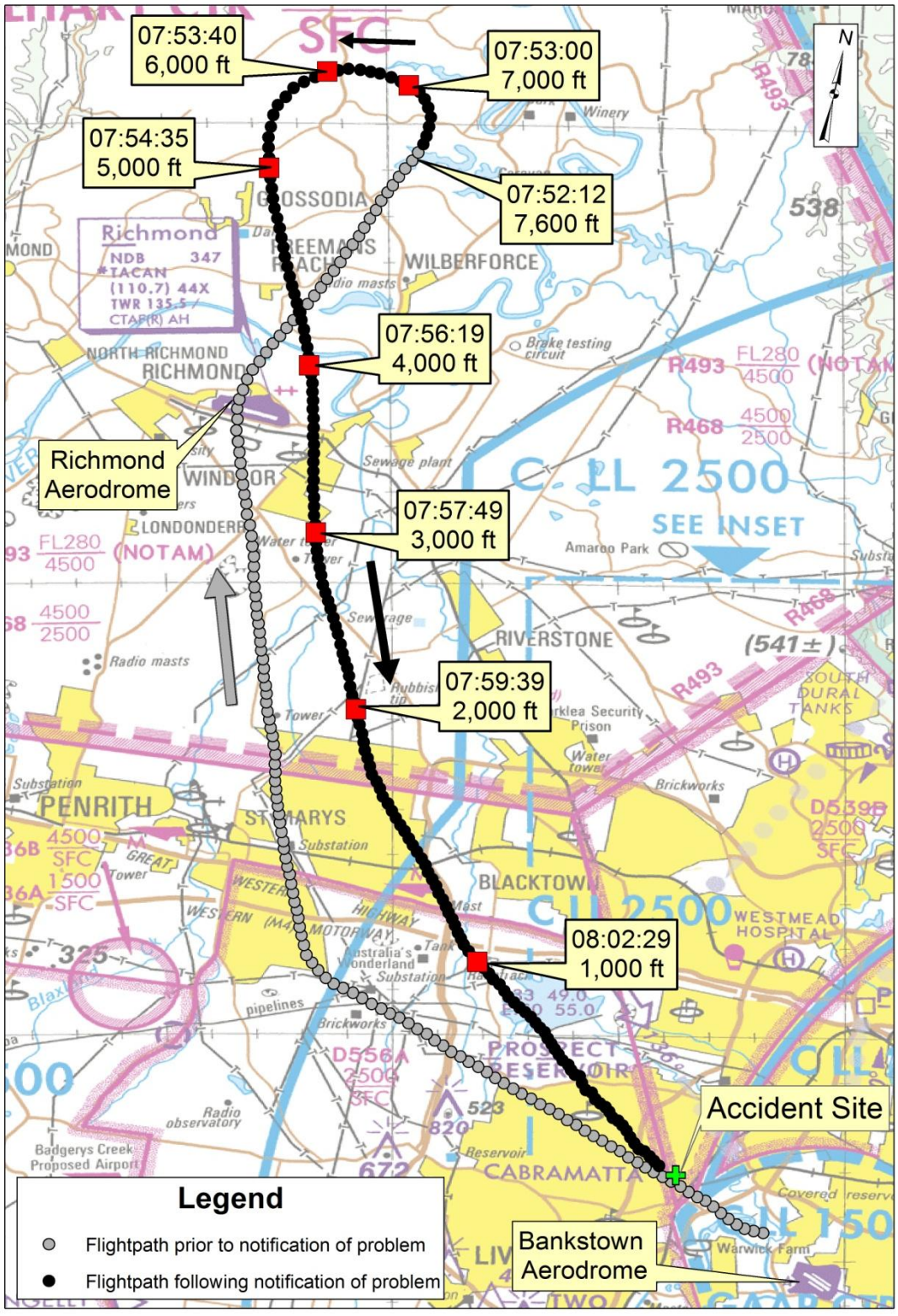

Chart extract courtesy Airservices Australia.

- At 0803, the pilot sought confirmation from ATC that the aircraft was heading straight towards Bankstown Aerodrome and advised that he was having difficulty maintaining height. The aircraft was descending through 600 ft with a groundspeed of 101 kts.
- At 0804:13, the aircraft was at 500 ft with a groundspeed of 101 kts.
- At 0805, the pilot asked ATC whether the controller was able to see the aircraft. The controller replied that he was not able to see the aircraft due to haze. The pilot advised that the aircraft was not maintaining height and asked about roads in the area. ATC advised that the M7 motorway was nearby and that the aircraft was approaching 3 NM (6 km) from Bankstown Aerodrome.
- At 0805:03, the aircraft was at 300 ft with a groundspeed of 95 kts.
- At 0805, the pilot advised ATC that he was about to land the aircraft on a road. ATC suggested the Warwick Farm racecourse as a landing area but the pilot replied that he could not see the racecourse.
- Witnesses located in the Rooty Hill, Prospect Reservoir, Wetherill Park and Canley Vale area that observed the aircraft were generally consistent in recalling that the aircraft's right propeller was not rotating. Several witnesses reported hearing a 'spluttering' engine sound. A witness on Canley Vale Road, very near to the initial impact point, observed the landing gear starting to extend immediately prior to the aircraft colliding with an electric power line support pole.
- At about 0807, the aircraft collided with an electric power line support pole located on the eastern side of the intersection of Sackville Street and Canley Vale Road, Canley Vale.

The accident site was located about 6 km north-west of Bankstown Aerodrome. Contact marks on the support pole indicated that the aircraft's right wing initially impacted the pole as the aircraft proceeded in an easterly direction. Damage to other support poles and ground impact marks were consistent with the aircraft rolling to the right after the initial impact with the first pole and then continuing eastwards along Canley Vale Road, before coming to rest inverted in the driveway of a residential property.

The pilot and flight nurse were fatally injured and the aircraft was seriously damaged[3] by impact forces and an intense post-impact fire (Figure 2).

Pilot information

The pilot commenced employment with the operator in 2008. He held an Air Transport Pilot (Aeroplane) Licence that was endorsed for command of PA-31 aircraft (which included the PA-31P type), a current command (multi-engine aeroplane) instrument rating, and a valid Class 1 medical certificate with no restrictions. The pilot's logbook and operator's records showed that the pilot had accumulated 779.1 hours on the PA-31P aircraft including a total of 217.2 hours on PGW, a total multi-engine flight time of 1,699.7 hours and a total aeronautical experience of 2,435.1 hours.

Figure 2: Accident site

Aircraft information

The aircraft was a twin piston-engine, propeller-driven, low-wing aircraft, certified to seat up to seven occupants in a pressurised cabin. There were two seats in the cockpit and three passenger seats and a patient stretcher in the cabin.

The aircraft, serial number 31P-8414036, was manufactured in the United States in 1984 and at

3 The Transport Safety Investigation Regulations 2003 definition of 'seriously damaged' includes the 'destruction of the transport vehicle'.

the time of the accident, it had accumulated 6,267.2 hours total time in service.

The aircraft was equipped with two Textron Lycoming 350 hp, turbocharged, fuel–injected, horizontally–opposed, six-cylinder piston engines. The left engine model was a TIO-540-V2AD and the right engine model was an LTIO-540-V2AD.

The aircraft last underwent maintenance on 11 June 2010, consisting of a scheduled 50-hourly maintenance inspection. The last 100-hourly maintenance inspection was conducted on 28 May 2010 at 6,210.6 airframe hours.

Weather information

Aerodrome forecasts

The Bureau of Meteorology (BoM) issued an aerodrome forecast (TAF) for Bankstown Aerodrome at 0244 on 15 June 2010 with a local time validity period from 0400 to 2200 on 15 June, which encompassed the aircraft's planned takeoff and climb in the Bankstown area. The forecast wind was variable in direction at 3 kts, the visibility was forecast to be greater than 10 km with 1 – 2 oktas[4] of cloud at 3,500 ft above the aerodrome elevation, the outside air temperature (OAT) was forecast to be 4° C and the QNH 1032 hPa[5].

The BoM also issued a TAF for Richmond Aerodrome at 0303 on 15 June with local time validity period from 0400 to 2200 on 15 June. The forecast wind was variable in direction at 3 kts, the visibility was forecast to be 400 m in fog until 0900, the OAT 2° C and QNH 1032 hPa.

Actual weather information

The BoM Automatic Weather Station (AWS) located at Bankstown Aerodrome generated routine aerodrome weather reports (METAR). The METAR issued at 0800 indicated that the wind was from 340° true at 4 kts, the OAT was 6° C, the dewpoint[6] was 5° C, the visibility was 8 km with no cloud detected and the QNH was 1033 hPa.

The Bankstown Aerodrome automatic terminal information service (ATIS) 'Bravo'[7] was broadcast during the period encompassing the aircraft's departure and subsequent return flight towards Bankstown. The ATIS information included a variable wind of 5 kts, an OAT of 6° C, CAVOK[8] and a QNH of 1033 hPa. The pilot reported that he had received 'Bravo' when contacting the Bankstown Surface Movement Controller at 0734, 6 minutes prior to departure.

An AWS was also located at Richmond Aerodrome and the METAR issued at 0800 indicated that the wind was calm, the OAT 4° C, the dewpoint was 4° C, the visibility was 200 m with vertical visibility information being unavailable, and the QNH was 1033 hPa. An air traffic controller who was on duty in Richmond control tower later stated that the weather conditions at the aerodrome when the aircraft was flying over the Richmond area included a clear sky with a shallow fog that reduced visibility at ground level to 300 m.

Aerodrome information

Bankstown Aerodrome

Bankstown Aerodrome is located about 22 km south-west of the Sydney central business district at an elevation of 29 ft AMSL. The aerodrome has three parallel runways aligned in the 11/29 direction (111/291° magnetic (M)). The central runway, runway 11/29C, is constructed of asphalt and is 1,416 m long and 30 m wide. The aerodrome is serviced by a single ground-based navigation aid, a non-directional beacon (NDB).

4 Cloud amounts are reported in oktas. An okta is a unit of sky area equal to one-eighth of total sky visible to the celestial horizon. Few = 1 to 2 oktas, scattered = 3 to 4 oktas, broken = 5 to 7 oktas and overcast = 8 oktas.

5 QNH is the barometric pressure setting that enables an altimeter to indicate altitude; that is, the height above mean sea level.

6 Dewpoint referred to the temperature at which, under ordinary conditions, condensation began to occur in a cooling mass of air.

7 ATIS is a continuous broadcast of recorded information that includes routine operational and weather information pertinent to aircraft operations around a control area. When the information changes, the broadcast is updated to reflect the new information and the ATIS identifier is changed to the next letter in the phonetic alphabet.

8 CAVOK indicated that the visibility at Bankstown Aerodrome was 10 km or more and there was no significant cloud below 5,000 ft at the aerodrome.

Richmond Aerodrome

Richmond Aerodrome is located about 50 km north-west of the Sydney central business district and 40 km north-west of Bankstown Aerodrome. The aerodrome is at an elevation of 67 ft AMSL and is an Australian Defence Force facility located within the Royal Australian Air Force Base Richmond. The aerodrome has a single runway aligned in the 10/28 direction (095/275° M) that is constructed of asphalt and is 2,134 m long and 45 m wide. The aerodrome is serviced by two ground-based navigation aids, an instrument landing system (ILS) for runway 28 and an NDB.

Recorded information

Flight recorders

The aircraft was not fitted with a flight data recorder or a cockpit voice recorder, nor were those recorders required by the relevant aviation regulations.

Radar recording

Pilots operating within controlled airspace in the Sydney terminal area were required to use their aircraft's secondary surveillance radar (SSR) transponder. The Bankstown Surface Movement Controller had included a discrete SSR transponder code as part of the airways clearance that was issued to the pilot while he was taxiing the aircraft to runway 29C prior to departing Bankstown Aerodrome.

Transponder information from the aircraft was recorded in The Australian Advanced Air Traffic System (TAAATS) by the air traffic services provider, Airservices Australia. The system track data, relating to the aircraft's position, groundspeed and altitude, was logged every 5 seconds. The logged data was reviewed to establish the radar track and altitude following the aircraft's departure from Bankstown Aerodrome. Figure 1 shows the recorded track of the aircraft relative to Richmond and Bankstown aerodromes.

Radio recording

All communications between the relevant air traffic controllers and the pilot were recorded by ground-based automatic voice recording equipment. The sound quality of recorded transmissions from the controllers and the pilot was good.

Wreckage examination

An intense fuel-fed fire that followed the collision with the ground destroyed the fuselage and the inboard sections of the left and right wing. Sections of the right wing and right horizontal stabiliser were located along Canley Vale Road and verge, east of the Sackville Street intersection. All flight control surfaces were accounted for at the accident site.

The left and right engines and associated propellers were severely damaged by impact forces and fire.

The aircraft's engines and propeller assemblies were removed and transported to a secure location for further examination. Other components, including the flight and engine instruments, were also removed for further examination.

FURTHER INVESTIGATION

The investigation is continuing and will include:

- the examination of the aircraft's engines, propellers and other components
- a review of the aircraft's maintenance records
- an examination of operational issues
- a review of the operator's flight crew training records
- the additional analysis of the radar and voice recordings.