Australian Government

Australian Transport Safety Bureau

Wirestrike involving a Piper PA-25, VH-CPU

near Michelago, New South Wales on 20 September 2014

ATSB Transport Safety Report
Aviation Occurrence Investigation
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Addendum

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Wirestrike involving a Piper PA-25, VH-CPU

What happened

On 20 September 2014, the pilot of a Piper PA-25 aircraft, registered VH-CPU, conducted a ferry flight from Camden to Bunyan aeroplane landing area (ALA), via Goulburn, New South Wales.

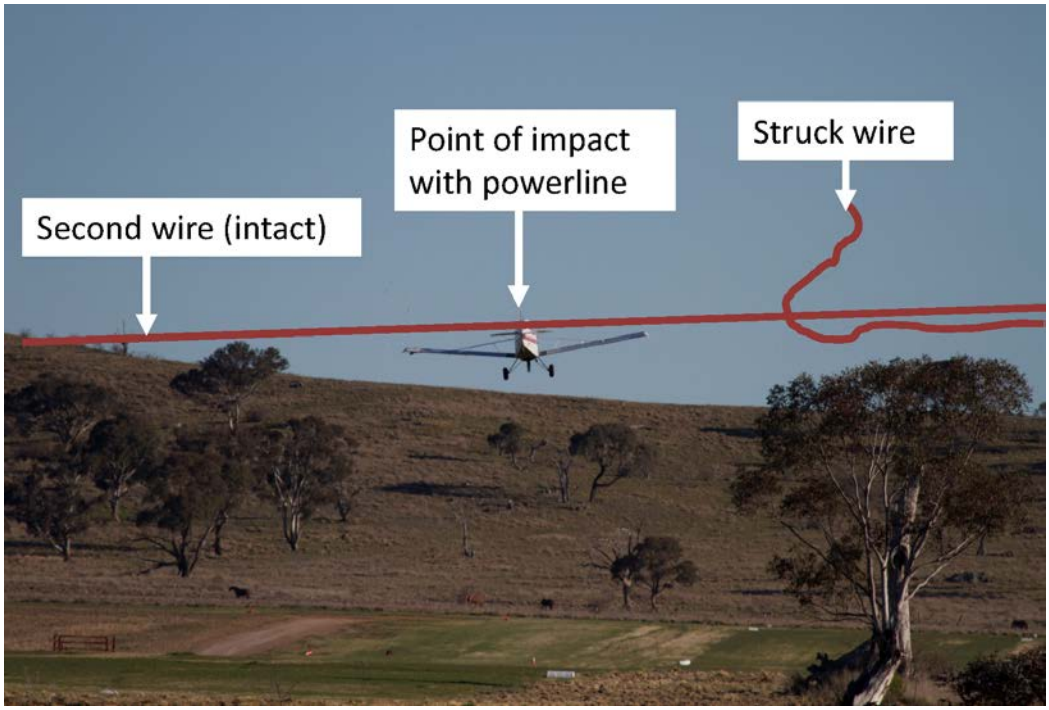
After refuelling at Goulburn aerodrome, the pilot tracked to overhead Michelago and continued south towards Bunyan. About 10 km south of Michelago, the pilot intended to overfly a private airstrip to assess its condition and suitability as a potential out-landing site for gliders operating from Bunyan.

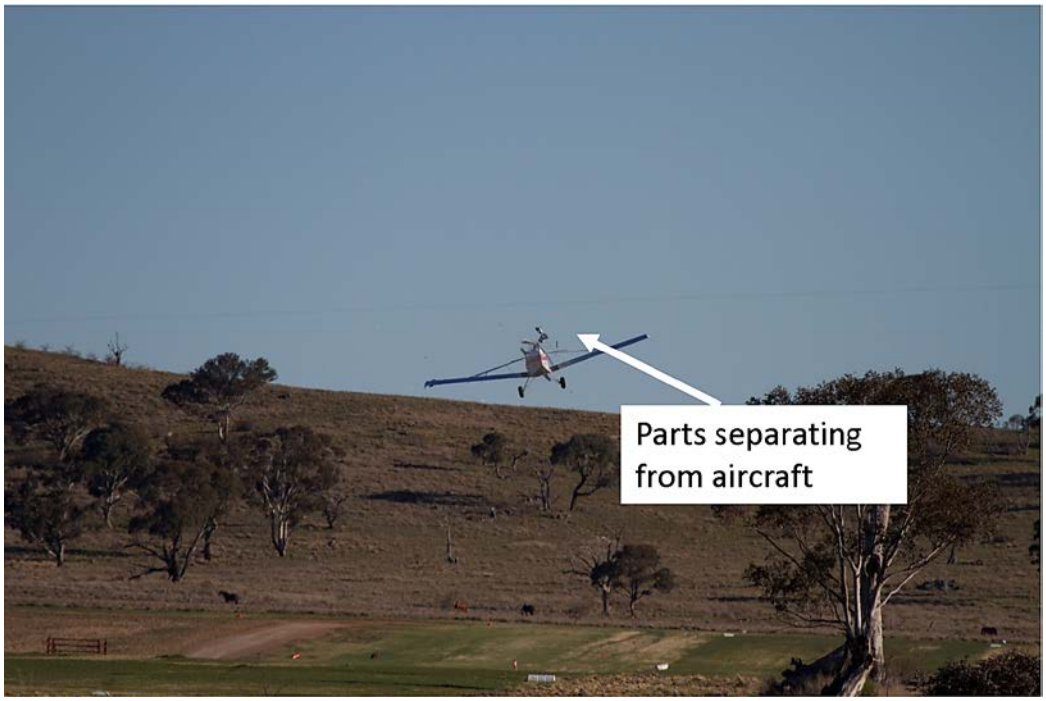
Damage to VH-CPU

Source: Used with permission

The aircraft was heading south and as the airstrip was oriented approximately north-south, the pilot elected to overfly the runway. The pilot observed the windsock indicating a southerly wind of about 8-10 kt. When about 300 m beyond the runway threshold, the aircraft struck powerlines that crossed the runway about 15 m above ground level, dislodging the windscreen and canopy (Figure 1). The top of the fin was severed by the powerlines.

Figure 1: Actual photographs showing VH-CPU wirestrike (wires enlarged for effect)

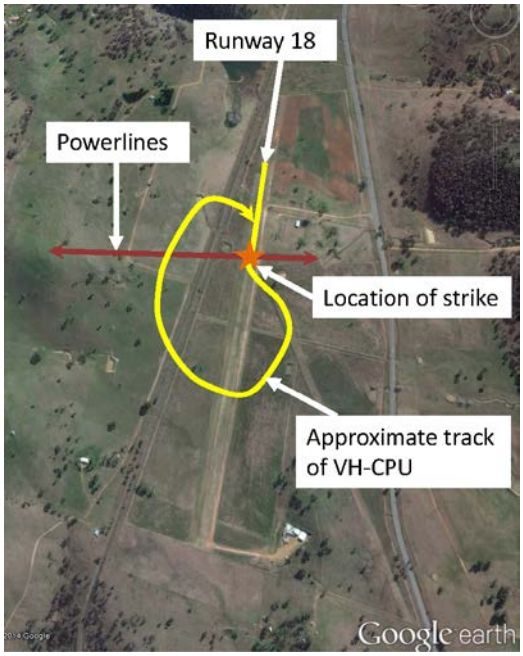




Source: Used with permission

The pilot attempted to broadcast a Mayday[1] call, but his headset was no longer in place. Immediately after the strike, the aircraft banked to the left before returning to level flight. The pilot assessed that the aircraft was too high to land ahead on the remaining runway and sighted a hill straight ahead. He then made a right turn, initially planning to land towards the north on the adjacent paddock. However, due to the rough surface of the paddock and tailwind, he conducted a short downwind leg before turning to the right, and the aircraft landed into wind on the runway (Figure 2).

Figure 2: Approximate flight path of VH-CPU



Source: Google earth and pilot recollection

[1] Mayday is an internationally recognised radio call for urgent assistance.

Aeroplane landing area information

The privately-owned grass ALA had been constructed between September 2009 and March 2010. It was used by the land-owner, who reported that he did not authorise other aircraft to land on the airstrip. The owner reported that he had alerted a member of the gliding club to the powerlines and advised that the airstrip could only be used in an emergency. The owner had previously found evidence of other aircraft striking the powerlines.

The airstrip was oriented approximately north-south, with a useable length of about 1,200 m and a width of 20 m. The airstrip was mown grass and clearly marked by white rectangular markers. A windsock was located adjacent to the northern threshold.

The powerlines

Two 11 kV powerlines crossed the runway east to west about 300 m south of the northern threshold at about 15 m above ground level (AGL). The powerlines were constructed in 1992. A power pole was located immediately east of the runway with the two wires spanning about 800 m to a pole situated on the top of a hill.

Electricity infrastructure provider report

In a report provided to the ATSB, the company responsible for the powerlines infrastructure advised that a court order was issued in May 2011, which required the powerlines to be relocated or placed underground so as not to present a hazard to aircraft movements. In July 2011, the provider had offered to contribute to the cost of having the powerlines run underground, however this had not been carried out. No compliance date was placed on the order. In September 2013, four flag type marker flags had been fitted to the powerlines by the provider, following a request from the owner and as a matter of public safety.

Wire marking standards

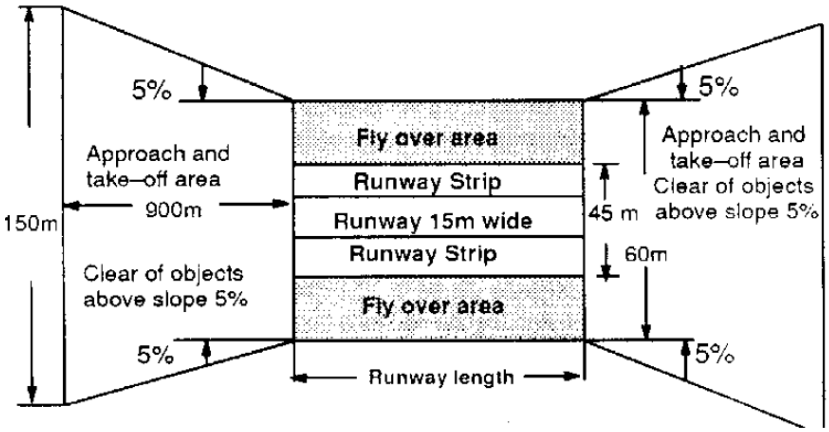
The requirements for mapping and marking powerlines and their supporting structures were published in *Australian Standard AS 3891.1, Part 1, Permanent marking of overhead cables and their supporting structures* and *AS 3891.2, Part 2, Marking of overhead cables for low level flying*. The ALA was not used as described in Clause 3.2 of AS 3891.1 nor were the powerlines in an area involved in planned low-flying operations as described in AS 3891.2. The powerlines did not require marking in accordance with either Australian Standard.

Advisory material

The Civil Aviation Advisory Publication (CAAP) 92-1(1) *Guidelines for aeroplane landing areas*,[2] provided guidance on how pilots may determine the suitability of an aeroplane landing area (ALA) such as the recommended obstacle clearance standards and suggested landing area markings. The CAAP defined an obstacle free area to mean 'there should be no wires or any other form of obstacles above the approach and take-off areas, runway, runway strips, fly-over areas or water channels'. The minimum landing area physical characteristics recommended in the CAAP for single-engine and centre-line thrust aeroplanes not exceeding 2,000 kg maximum take-off weight for day operations is depicted in Figure 3.

[2] www.casa.gov.au/scripts/nc.dll?WCMS:OLDASSET::svPath=/download/CAAPs/ops/,svFileName=92_1.pdf

Figure 3: Recommended landing area characteristics



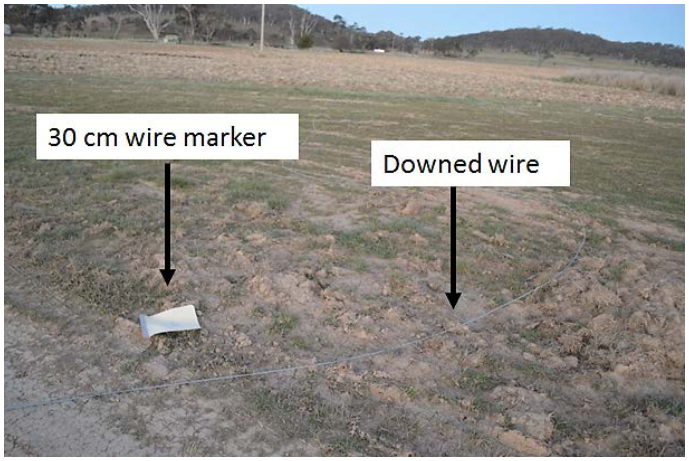
Source: Civil Aviation Safety Authority

Pilot hazard awareness

The pilot reported that he had overflown the airstrip and assessed its condition 3 to 4 times previously and was not aware of the wires. Gliding club members reported having previously been given verbal permission to use the landing strip. The pilot later found that some of the gliding club instructors knew of the powerlines' existence. The surrounding land was rocky and generally unsuitable for landing, making the airstrip appear to be a suitable emergency landing field.

The wires were marked with square off-white markers, about 30 cm wide, located adjacent to but not overhead the runway (Figure 4).

Figure 4: Wire marker



Source: Operator

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Gliding Federation of Australia

As a result of this occurrence, the Gliding Federation of Australia (GFA) has advised the ATSB that they are taking the following safety actions:

- The GFA has reminded all pilots operating into an unfamiliar landing area to remain vigilant and ensure the necessary precautions are taken to reduce the risks. Precautionary searches

are to be conducted initially from a safe height, working to lower level once risks have been identified.

- The GFA has reminded pilots of tow aircraft to ensure the owner of an airstrip or paddock has given permission to operate there and provided information regarding powerlines and other potential hazards.
- The GFA recommended all gliding clubs fit passive wire-strike protection systems to tow aircraft, especially those used for paddock retrieves.

Safety message

Research conducted by the ATSB found that 166 aircraft wirestrikes were reported to the ATSB between July 2003 and mid-June 2011 and another 101 occurred and were unreported but identified by electricity distribution and transmission companies. The majority of wirestrike occurrences were associated with aerial agriculture operations however, 22 occurrences (8 per cent) involved private operations. The research report, *Under reporting of aviation wirestrikes*, is available at www.atsb.gov.au/publications/2011/ar2011004.aspx.

The ability of pilots to detect powerlines depends on the physical characteristics of the powerline such as the spacing of power poles, the orientation of the wire, and the effect of weather conditions, especially visibility.

Depending on the environmental conditions, powerlines may not be contrasted against the surrounding environment. Often the wires will blend into the background vegetation and cannot be recognised. In addition, the wire itself can be beyond the resolving power of the eye: that is, the size of the wire and limitations of the eye can mean that it is actually impossible to see the wire. As such, pilots are taught to use additional cues to identify powerlines, such as the associated clearings or easements in trees or fields that can underlie the powerline, or the power poles and buildings to which the powerlines may connect.

The ATSB publication, *Avoidable Accidents No. 2 – Wirestrikes involving known wires: A manageable aerial agriculture hazard*, www.atsb.gov.au/publications/2011/avoidable-2-ar-2011-028.aspx advises pilots to always conduct an aerial reconnaissance to confirm wire locations and other hazards.

Risks associated with operations to private airstrips can be mitigated by ALA owners assessing their airstrips against the guidance in CAAP 92-1(1) *Guidelines for aeroplane landing areas*. Such risk assessments would benefit from giving consideration to first time users of the ALA.

General details

Occurrence details

Date and time:	20 September 2014 – 1630 EST	
Occurrence category:	Accident	
Primary occurrence type:	Wirestrike	
Location:	near Michelago, New South Wales	
	Latitude: 35° 47.47' S	Longitude: 149° 09.5' E

Aircraft details

Manufacturer and model:	Piper Aircraft Corporation PA-25	
Registration:	VH-CPU	
Serial number:	25-3607	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.