



Australian Government

Australian Transport Safety Bureau

Wirestrike – Robinson R44, VH-HIE

21 km E of Maryborough aerodrome, Victoria, 12 June 2012

ATSB Transport Safety Report
Aviation Occurrence Investigation
AO-2012-079
Final

Report No. AO-2012-079

Publication date 29 October 2012

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

Publishing information

Published by: Australian Transport Safety Bureau
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Wirestrike - Robinson R44, VH-HIE

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What happened

On 12 June 2012, at about 1000 Eastern Standard Time¹ a Robinson Helicopter Company R44 Raven 1 (R44) helicopter, registered VH-HIE (HIE), departed Moorabbin Airport, Victoria with one person on board to conduct a private flight to the pilot's property at Moolort², Victoria.

During the flight, the pilot decided to check on the progress of a bore under construction (bore site)³, about 2 km west of his intended destination. The pilot had not previously landed at the bore site, though he was very familiar with the area from ground level and had landed at a nearby property.

As there was no wind, the pilot flew HIE past the bore site in a westerly direction, parallel with the road and the main powerline, before conducting a left turn and landing south of the road in an easterly direction (Figure 1). This approach path enabled him to scan the area for obstacles.

After shutting down, the pilot checked the progress of the bore construction and noted that there had been no activity. He then returned to the helicopter to prepare for departure. The pilot scanned the area to determine the best direction for departure, checking for wires as well as other obstacles. The pilot's decision to depart in an easterly direction was primarily influenced by the main powerline and the terrain. The pilot stated that during this time he felt frustrated by the lack of progress on the bore.

At about 1130, the helicopter became airborne and as it transitioned from the hover to forward flight, the pilot saw a single strand powerline directly ahead. There was no time to avoid the wire the helicopter struck the wire on the middle of the main rotor mast. The pilot reported that he had been focused on avoiding the main powerline and had not seen the second powerline during his scans of the area on arrival or prior to departure.

Following the wirestrike, the helicopter swung upwards on the wire and the pilot remembered seeing the sky before the wire broke, releasing the helicopter. The pilot had limited control and was able to change the attitude to remain relatively straight and level until the helicopter landed heavily on the right skid.

The pilot was not injured, however the helicopter sustained serious damage.

Accident site



Source: Aircraft owner

¹ Eastern Standard Time was Coordinated Universal Time (UTC) + 10 hours.

² The property at Moolort was about 23 km east of Maryborough aerodrome, Victoria.

³ The bore site location was S 37° 06.16 E 143° 55.44.

Figure 1: Map of accident site



Source: Google Earth

Powerline information

The main powerline ran in an east-west direction north of the road (marked in blue in Figure 1) and formed a major part in the pilot's choice of approach and departure paths.

The pilot had known of the second powerline prior to the incident flight, but only remembered it as it came into sight, as he transitioned from hover to forward flight, about 40 m from where he had landed. The second powerline was a single multi-strand wire of about 6 to 8 mm diameter. One pole for the wire was about 8 m to the south of the accident site; the other was beside a house on the northern side of the road. The pole near the house appeared to the pilot to be a part of the main powerline system that ran parallel to the road.

The main powerline running along the road in the vicinity of the landing site and the location of the poles supporting both the main and second powerlines, in the pilot's opinion, most likely provided a considerable distraction and contributed to his inability to identify the second powerline during the evaluation of his departure path.

There were no powerline markers on the second powerline, nor was there any requirement for them under the Australian Standard⁴.

The pilot had not undertaken any wire environment training, though he was aware of the existence of such training.

Safety message

The accident highlights the importance of a proper reconnaissance when flying in a wire environment and remaining focused only on operational tasks. The pilot's reaction to the wirestrike, which was to continue to fly the aircraft to the ground, assisted in him being able to land without injury.

⁴ Australian Standard, AS 3891.1-2008 Air Navigation – Cables and their supporting structures – Marking and safety requirements.

ATSB research found that at least 40 per cent of wirestrike occurrences in Australia between July 2003 and June 2011 had not been reported. Of those reported, wirestrikes were the third most prevalent cause of fatal accidents in private flying operations and that 'when all incidents and accidents are taken into account, the likelihood of being killed was ... about 50 per cent for a wirestrike.' Assessing and planning issues were linked to these accidents and a failure to conduct a proper reconnaissance was a common contributing factor in wirestrike accidents.

Research into aerial agriculture accidents found that wirestrikes occurred even when pilots knew the location of wires. Though this accident was not related to agricultural operations, the research found that focussing only on operational tasks while flying was an important habit to develop.

Internationally, in 2010 the United States Federal Aviation Administration (FAA) released a safety alert for operators (SAFO) that noted that the best methods of reducing risks in a wire environment were education and vigilance in the cockpit.

Fatal Traps for Helicopter Pilots contained a section titled 'After you hit a wire', reminding pilots to continue to fly the aircraft to the ground.

Further safety information relating to wirestrikes is available in the following publications:

AR-2011-004 *Under reporting of aviation wirestrikes*, is available at:

www.atsb.gov.au/publications/2011/ar2011004.aspx

AR-2011-028 *Wirestrikes involving known wires: A manageable aerial agricultural hazard*, is available at:

www.atsb.gov.au/publications/2011/ar2011028.aspx

AR-2008-045 *Improving the odds: Trends in fatal and non-fatal accidents in private flying operations*, is available at:

www.atsb.gov.au/publications/2008/ar2008045.aspx

The FAA Safety Alert for Operators (SAFO) 10015, 8 June 2010, is available at:

www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/

The Helicopter Association International video highlighting the importance of wirestrike prevention training is available at:

www.rotor.com/Publications/HAIVideosLibrary/SurvivingtheWiresEnvironment.aspx

Fatal Traps for Helicopter Pilots by Greg Whyte was published by McGraw Hill in 2007.

The International Helicopter Safety Team (IHST) website provides safety information at:

www.ihst.org/Default.aspx?tabid=3057&language=en-US

The following ATSB investigation reports provide further reading on occurrences related to wirestrike:

- AO-2010-033 – Wirestrike, 20 May 2010
www.atsb.gov.au/publications/investigation_reports/2010/aair/ao-2010-033.aspx
- AO-2011-080 – Wirestrike, 12 July 2011
www.atsb.gov.au/publications/investigation_reports/2011/aair/ao-2011-080.aspx

Aircraft details

Manufacturer and model:	Robinson Helicopter Company R44 Raven 1	
Operator:	Owner	
Registration:	VH-HIE	
Type of operation:	Private	
Location:	21 km east of Maryborough aerodrome, Victoria	
Occurrence type:	Wirestrike	
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 Bureau 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.