Australian Government
Australian Transport Safety Bureau

Collision with terrain involving Robinson R22, VH-HEP

40 km NE of Hughenden, Queensland, 13 May 2014

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Addendum

Page	Change	Date

Collision with terrain involving Robinson R22, VH-HEP

What happened

On 13 May 2014, the pilot of a Robinson R22 helicopter, registered VH-HEP, was conducting aerial mustering operations on a property about 40 km north-east of Hughenden, Queensland.

At about 1500 Eastern Standard Time, as the pilot was mustering a herd of cattle, he noticed a number of the cattle retreat to a protected area beneath trees. The pilot manoeuvred the helicopter in a manner that he hoped would keep the cattle moving, but they remained beneath the trees.

In a further attempt to keep the cattle moving, the pilot descended in what appeared to be a clear area adjacent to the trees under which the cattle had retreated. During descent, the attention of the pilot was focussed to his right, on the cattle beneath the trees. As the aircraft descended, the main rotor blade struck a dead tree to the left of the helicopter's nose, in about the pilot's 10 o'clock position.[1] The pilot later commented that the dead tree struck by the rotor blade was about 10 m tall, and that the initial blade strike was about three quarters of the way up from the base of the tree.

The pilot commented that he had not noticed that particular tree during descent, probably because his attention was focussed in a different direction, on the cattle beneath other trees. Additionally, the dead tree was less prominent than other surrounding trees covered with foliage. The pilot's view of the dead tree may also have been obscured to some extent by the cockpit frame, and the helicopter's instrument panel and centre console.

The pilot was immediately aware of the blade strike, and could feel vibration through the helicopter cyclic control. Concerned about the extent of damage to the helicopter and possible loss of control, the pilot elected to make a controlled descent to the ground immediately beneath. The pilot believed that there may have been additional blade strikes on the same tree as the helicopter descended.

After the helicopter settled on the ground, the pilot applied control friction, unstrapped, and stepped onto the skid to assess the damage. At about that moment, he became aware of a fire in the grass beneath the engine behind the cockpit area. The pilot commented that the fire appeared to be growing rapidly. He vacated the helicopter and retreated to a safe area, as the flames spread quickly up the side of the helicopter and into the cockpit area. The helicopter was subsequently destroyed by the fire (Figure 1).

[1] The clock code is used to denote the direction of an aircraft or a surface feature relative to the heading of the observer's aircraft, expressed in terms of position on an analogue clock face. Twelve o'clock is ahead while an aircraft or surface feature observed abeam to the left would be said to be at 9 o'clock.

Figure 1: Accident site showing long, dry grass and 'gidgee' trees in the background

Source: Helicopter operator

Pilot comments

The pilot made a number of comments in relation to the accident:

- The initial blade strike appeared to have been less than a third of a metre from the blade tip.
- Following the blade strike, the pilot elected to land immediately rather than risk flying to a clear area, given uncertainty regarding the extent of damage to the helicopter.
- Following the accident, the pilot assessed that, apart from the dead tree that the blade struck, there was sufficient space in which to descend.
- The grass that caught fire beneath the helicopter after landing was probably slightly less than a metre tall.
- The pilot was surprised at how rapidly the fire spread, leaving no opportunity to safely retrieve the fire extinguisher from the cockpit.

Safety message

This incident highlights the importance of continuous awareness of obstacles during aerial mustering operations, particularly when manoeuvring in relatively confined areas.

Although the pilot had little choice on this occasion, this accident serves as a reminder of the fire hazard associated with landing in long grass. The Robinson R22 pilot operating handbook includes the following safety tip:

> Never land in tall dry grass. The exhaust is low to the ground and very hot; a grass fire may be ignited.

General details

Occurrence details

Date and time:	13 May 2014 – 1500 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	40 km NE of Hughenden, Queensland	
	Latitude: 20° 34.18' S	Longitude: 144° 30.43' E

Aircraft details

Manufacturer and model:	Robinson Helicopter Company R22 Beta	
Registration:	VH-HEP	
Serial number:	3255	
Type of operation:	Aerial Work	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Destroyed	

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.