



**Australian Government**

**Australian Transport Safety Bureau**

# Collision with terrain involving a Robinson R44, VH-VOH

130 km E of Alice Springs, Northern Territory, on 14 July 2015

**ATSB Transport Safety Report**  
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**Postal address:** PO Box 967, Civic Square ACT 2608  
**Office:** 62 Northbourne Avenue Canberra, Australian Capital Territory 2601  
**Telephone:** 1800 020 616, from overseas +61 2 6257 4150 (24 hours)  
Accident and incident notification: 1800 011 034 (24 hours)  
**Facsimile:** 02 6247 3117, from overseas +61 2 6247 3117  
**Email:** [atsbinfo@atsb.gov.au](mailto:atsbinfo@atsb.gov.au)  
**Internet:** [www.atsb.gov.au](http://www.atsb.gov.au)

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#### **Addendum**

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# Collision with terrain involving a Robinson R44, VH-VOH

## What happened

On 14 July 2015, the pilot of a Robinson R44 helicopter, registered VH-VOH, was conducting aerial mustering operations on a property, about 70 NM east of Alice Springs, Northern Territory.

At about 1300 Central Standard Time (CST), the pilot was mustering cattle along a creek system. The helicopter was above tree height, at about 50 ft above ground level (AGL), when the pilot slowed the helicopter to an airspeed of about 40 kt. The pilot felt a small vibration, and initially thought it was due to loose tape on the main rotor blade. The pilot looked for a suitable landing site, but the vibration increased significantly.

As the helicopter descended, the pilot manoeuvred the helicopter through a gap between trees, and pushed the cyclic<sup>1</sup> forward to maintain airspeed. The pilot lowered the collective<sup>2</sup> and noticed the engine seemed to go very quiet and the low rotor revolutions per minute (RPM) warning horn sounded. The pilot made a radio call to advise another pilot operating nearby that the helicopter was going down. The pilot then flared<sup>3</sup> the helicopter to try to cushion the landing impact. The right skid touched down first, and the helicopter rolled onto its right side.

The pilot sustained minor injuries and the helicopter was substantially damaged (Figure 1).

## ***Pilot comments***

The pilot provided the following comments:

- There was no noise to indicate that the helicopter had hit anything.
- The helicopter did not yaw when it vibrated.
- The wind was from the southeast at less than five knots, and the pilot turned the helicopter towards the east between the trees.
- The weather was fine; there were no visible signs of moisture, and only a few high level clouds.
- The pilot did not select the carburettor heat on at any stage during the flight.
- Both tail rotor blades broke off the helicopter's tail. This may have occurred prior to striking the ground, but the pilot did not detect the helicopter tail rotor colliding with anything.

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<sup>1</sup> A primary helicopter flight control that is similar to an aircraft control column. Cyclic input tilts the main rotor disc varying the attitude of the helicopter and hence the lateral direction.

<sup>2</sup> The collective pitch control, or collective, is a primary flight control used to make changes to the pitch angle of the main rotor blades. Collective input is the main control for vertical velocity.

<sup>3</sup> Flare reduces rate of descent before ground impact by increasing collective pitch; this increases lift, trading stored rotor kinetic energy for increased aerodynamic reaction by blades, and should result in a gentle touchdown.

**Figure 1: Accident site showing damage to VH-VOH**



Source: Aircraft owner

### ***Meteorological conditions***

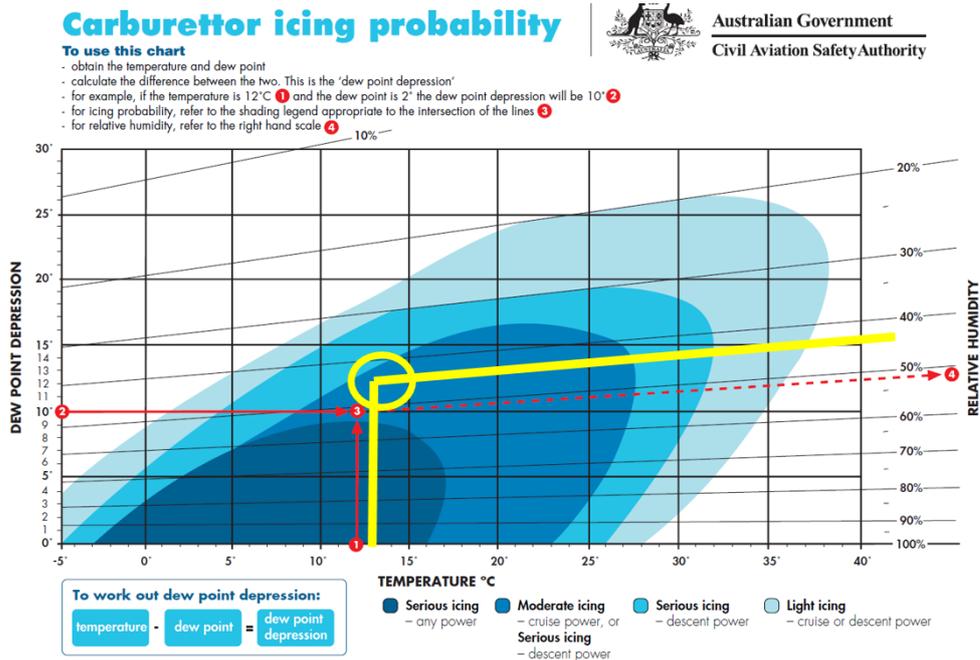
Weather observations from the Bureau of Meteorology's automatic weather station at Alice Springs indicated that at 1300, the temperature was 12.9°C, relative humidity 45%, and the dew point<sup>4</sup> was 1.2°C. The dew point depression, calculated by subtracting the dew point from the temperature, at that time was 11.7.

According to the Carburettor Icing Probability chart (Figure 2), the conditions indicated a high probability of serious carburettor icing at descent power.

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<sup>4</sup> Dewpoint is the temperature at which water vapour in the air starts to condense as the air cools. It is used among other things to monitor the risk of aircraft carburettor icing or likelihood of fog at an aerodrome.

Figure 2: Carburettor icing chart showing prevailing conditions in yellow



Source: Civil Aviation Safety Authority – modified by the ATSB

### Safety message

The ATSB advises all pilots of aircraft fitted with a carburettor to check the forecast conditions and know the risk of carburettor icing prior to each flight. The [carburettor icing probability chart](#) is available on the CASA website.

The following publications provide additional information on carburettor icing:

- [Melting Moments: Understanding Carburettor Icing](#)
- [Flight Safety Australia – A chill in the air](#)
- [Mornington Sanford Aviation – No ice, thank you](#)
- [Helicopter Safety – Carb Icing](#)

### General details

#### Occurrence details

Date and time:	14 July 2015 – 1300 CST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	130 km E Alice Springs, Northern Territory	
	Latitude: 23° 48.50' S	Longitude: 133° 54.05' E

## Helicopter details

Manufacturer and model:	Robinson Helicopter Company R44	
Registration:	VH-VOH	
Serial number:	2149	
Type of operation:	Aerial work – Aerial mustering	
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.