

Australian Government Australian Transport Safety Bureau

# Collision with terrain – Robinson R22, VH-STK

near Miranda Downs (ALA), Queensland, 6 July 2012

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# Collision with terrain – Robinson R22, VH-STK

AO-2012-091

#### What happened

At 0840 Eastern Standard Time<sup>1</sup> on 6 July 2012, during mustering operations near Miranda Downs aeroplane landing area (ALA), Queensland, the right skid of a Robinson R22 Beta (R22) helicopter, registered VH-STK (STK), struck a tree, causing the aircraft to collide with terrain (Figure 1). The pilot, the only occupant, was seriously injured and the helicopter sustained substantial damage.

#### Accident site



Source: The aircraft operator

STK had departed Miranda Downs ALA at 0640 with another helicopter. Together the helicopters had mustered cattle in a

paddock about 30 km from the ALA. STK then departed the area to check on a dam that would be used as a target point in the next mustering activity.

When unable to contact the pilot of STK on the radio, the pilot of the other helicopter conducted a brief search and found the accident site. The pilot of STK had no memory of the accident sequence.

The operator conducted an investigation into the accident and, using Global Positioning System (GPS) data, determined that STK had been operating at an average altitude of about 310 ft above ground level (AGL). Tracking for the dam, STK climbed to 2,308 ft AGL with a ground speed of 24 kt before commencing a spiral descent to the left to an altitude of 283 ft AGL at a ground speed of 42 kt. The last recorded data was an altitude of about 83 ft AGL and ground speed of 57 kt.

Bureau of Meteorology data indicated that the temperature was 14.7° C and the dew point 1.3° C. The operator determined that the combination of temperature and dew point would indicate a moderate carburettor icing<sup>2</sup> risk at cruise power and a serious icing risk at descent power.

<sup>&</sup>lt;sup>1</sup> Eastern Standard Time (EST) was Coordinated Universal Time (UTC) + 10 hours.

<sup>&</sup>lt;sup>2</sup> Carburettor ice is formed when the normal process of vaporising fuel in a carburettor cools the carburettor throat so much that ice forms from the moisture in the airflow and interferes with the operation of the engine.

Figure 1: Accident site



Source: The aircraft 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 actions in response to this occurrence.

#### Aircraft operator

As a result of this occurrence, the aircraft operator has advised the ATSB that they have taken the following safety actions:

#### Carburettor icing

The aircraft operator reminded all pilots of the content of the Robinson Safety Notice SN-25 – *Carburettor Ice*, and to be familiar with Section 4 of the R22 Flight Manual – *Normal Procedures*, particularly page 4-11 – *Use of carburettor heat* and *Use of carb heat assist*.

#### Auto-rotations

The aircraft operator also advised their pilots to be aware of the details in Robinson Safety Notice SN-38 – *Practice Autorotations Cause Many Training Accidents*, and also cautioned them that auto-rotations should only be practised or used for rapid decent when the pilot is confident that they are over an area where a safe power-off landing can be made in case of engine stoppage.

### Safety message

Carburettor ice can occur in temperatures as high as 32° C with high humidity. Pilots are reminded to maintain awareness of the weather conditions that are conducive to carburettor ice formation and closely monitor aircraft performance during times when the risk exists.

The following publications provide useful information on carburettor icing and avoidance:

- Robinson Safety Notice SN-25 Carburettor Ice www.robinsonheli.com/srvclib/rchsn25.pdf
- Robinson Safety Notice SN-31 Governor Can Mask Carb Ice www.robinsonheli.com/srvclib/rchsn31.pdf
- Ice Advice, in Flight Safety Australia, March-April 2006, pages 26-33 www.casa.gov.au/fsa/2006/apr/26-33.pdf
- Ice Blocked, in Flight Safety Australia, November-December 2004, pages 31-33 www.casa.gov.au/fsa/2004/dec/32-33.pdf
- The ATSB educational fact sheet titled *Melting Moments: Understanding Carburettor Icing* is available at: www.atsb.gov.au/publications/2009/carburettor-icing.aspx
- The Civil Avaition Safety Authority (CASA) Carburettor icing probability chart can be purchased from the CASA Shop and is available at: www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD:1543755187:pc=PC\_90006

The Robinson Safety Notice SN-38 – *Practice Autorotations Cause Many Training Accidents is available at:* 

www.robinsonheli.com/srvclib/rhcsn-38.pdf

The following ATSB investigation reports provide further reading on carburettor icing:

- ATSB Report AO-2010-107
  <u>www.atsb.gov.au/publications/investigation\_reports/2010/aair/ao-2010-107.aspx</u>
- ATSB Report AO-2009-031
  <u>www.atsb.gov.au/publications/investigation\_reports/2009/aair/ao-2009-031.aspx</u>

# **Helicopter details**

Manufacturer and model:	Robinson Helicopter Company R22 E	Beta	
Registration:	VH-STK		
Type of operation:	Aerial mustering		
Location:	23 km north east of Miranda Downs ALA, Queensland		
Occurrence type:	Collision with terrain		
Persons on board:	Crew – 1	Passengers – nil	
Injuries:	Crew – 1 serious	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.