



Australian Government

Australian Transport Safety Bureau

Collision with terrain involving a Robinson R22, VH-HWJ

90 km S of McArthur River Mine, Northern Territory, on 12 November 2015

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Addendum

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Collision with terrain involving a Robinson R22, VH-HWJ

What happened

On 12 November 2015, a pilot was mustering cattle in a Robinson R22 helicopter, registered VH-HWJ, at a property about 90 km south of McArthur River Mine, Northern Territory.

At about 1400 Central Standard Time (CST), as the helicopter approached the cattle yards, it descended rapidly and collided with a tree and terrain. The helicopter landed on its side and sustained substantial damage (Figure 1). The accident occurred about 200 m prior to the cattle yards. The pilot sustained serious injuries and was unable to recall the sequence of events.

Figure 1: Accident site showing damage to VH-HWJ

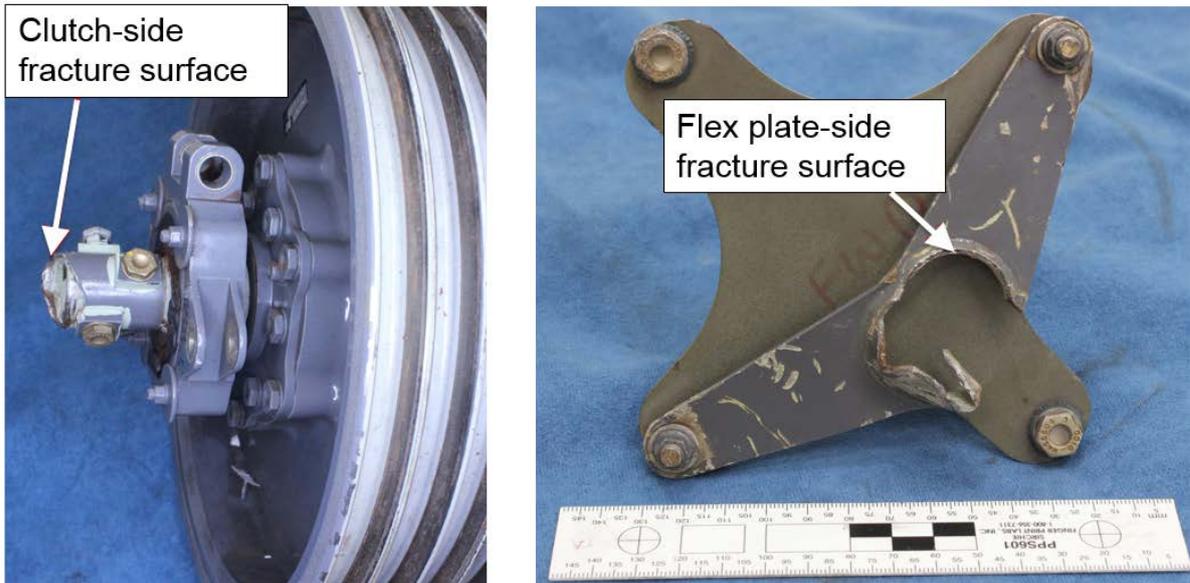


Source: Helicopter operator

Analysis of fractured yoke

The yoke connecting the clutch shaft to the rearward flex plate was found to have fractured at the connection to the shaft (Figure 2). The ATSB conducted analysis to determine whether the yoke failure may have contributed to the accident, or occurred as a result. The analysis found no evidence of fatigue damage in the yoke, and no other signs of pre-existing damage. The helical fracture was consistent with torsional overstress inducing failure in the yoke.

Figure 2: Fracture surfaces



Source: ATSB

Weather

The weather at McArthur River mine was recorded at 1200 and 1530. At 1200, the wind was from 340° at 5 kt and the temperature was 36 °C. At 1530, the wind was from 160° at 4 kt and the temperature was 38 °C. The direction of the helicopter relative to the wind at the time of the accident could not be determined. The ambient temperature at the time of the accident was about 37 °C. Although the influence of the temperature on the accident is unknown, high ambient temperatures adversely affect helicopter performance.

Operator comments

Subsequent to a previous accident, the operator mandated the wearing of helmets for all pilots. The operator commented that although the pilot sustained head injuries, the outcome might have been worse if the pilot had not been wearing a helmet.

ATSB comment

The ATSB was unable to determine the cause of the accident.

Safety message

US military research¹ analysed helicopter accidents that were at least partially survivable. It found that occupants not wearing a protective helmet were significantly more likely to sustain severe and fatal head injuries. The US National Transportation Safety Board (NTSB) also acknowledged that the use of head protection can reduce the risk of injury and death. The NTSB issued Safety Recommendation [A-88-009](#), recommending that crewmembers of emergency medical services helicopters wear protective equipment including helmets.

The ATSB investigation report ([AO-2014-058](#)) into an accident involving a Robinson R22 helicopter where the pilot sustained a serious head injury, reminded pilots and operators to consider the benefit of occupants wearing helmets to reduce the risk of head injury in the event of an emergency landing.

¹ Crowley, J.S. (1991) Should Helicopter Frequent Flyers Wear Head Protection? A Study of Helmet Effectiveness. *Journal of Occupational and Environmental Medicine*, 33(7), 766-769.

General details

Occurrence details

Date and time:	12 November 2015 – 1400 CST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	90 km S of McArthur River Mine, Northern Territory	
	Latitude: 17° 14.48' S	Longitude: 136° 10.72' E

Helicopter details

Manufacturer and model:	Robinson Helicopter Company R22
Registration:	VH-HWJ
Serial number:	2930
Type of operation:	Aerial Work - Aerial Mustering

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 operations involving the travelling public.

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.