



Australian Government  
Australian Transport Safety Bureau

# Collision with terrain in dark night conditions involving Robinson R22 helicopter, VH-YPC

70 km north-west of Halls Creek, Western Australia | 25 August 2014



Investigation

**ATSB Transport Safety Report**  
Aviation Occurrence Investigation  
AO-2014-144  
Final – 16 December 2014

Source: Cover photo Western Australia Police edited ATSB.

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

#### **Publishing information**

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#### **Addendum**

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# Safety summary

## What happened

On the afternoon of 25 August 2014, the pilots of two Robinson R22 helicopters were ferrying the helicopters from Yeeda to Springvale via a refuelling stop at Leopold Downs, within the Kimberley region of Western Australia. The pilot who was ahead by about 10 NM (18 km) arrived at Springvale about 40 minutes after last light but the pilot of the second helicopter, registered VH-YPC, did not arrive as expected.

A search using helicopters began early the next morning and the overdue helicopter was soon found in a seriously damaged state, close to the intended track and 25 NM (46 km) west of Springvale. The pilot had been fatally injured.

### Springvale homestead



Source: Western Australia Police

## What the ATSB found

The ATSB found that the pilot of VH-YPC, who did not hold a night visual flight rules (VFR) rating or instrument rating, continued flying towards the destination after last light (end of civil twilight), then in dark night conditions without local ground lighting, inadvertently allowed the helicopter to descend into terrain.

## Safety message

This accident highlights the inherent high risk of night flying in remote areas due to the absence or degradation of the visual references for establishing an aircraft's attitude and position. This risk is increased to unacceptable levels when night flying is attempted by pilots without night VFR or instrument flying qualifications. To avoid the usually fatal consequences of disorientation, day VFR pilots need to plan to arrive at their destination at least 10 minutes before last light and to have a realistic 'Plan B' to use when it becomes apparent that an intended flight cannot be completed in daylight. It is important, also, for operators and others involved in the operation of aircraft to actively support safety-first pilot decision making.

The ATSB is concerned about the frequency of accidents – many fatal – that involve pilots flying with reduced visual cues. This has been highlighted on the ATSB website as a SafetyWatch priority along with a number of strategies to help manage the risk and links to relevant safety resources.

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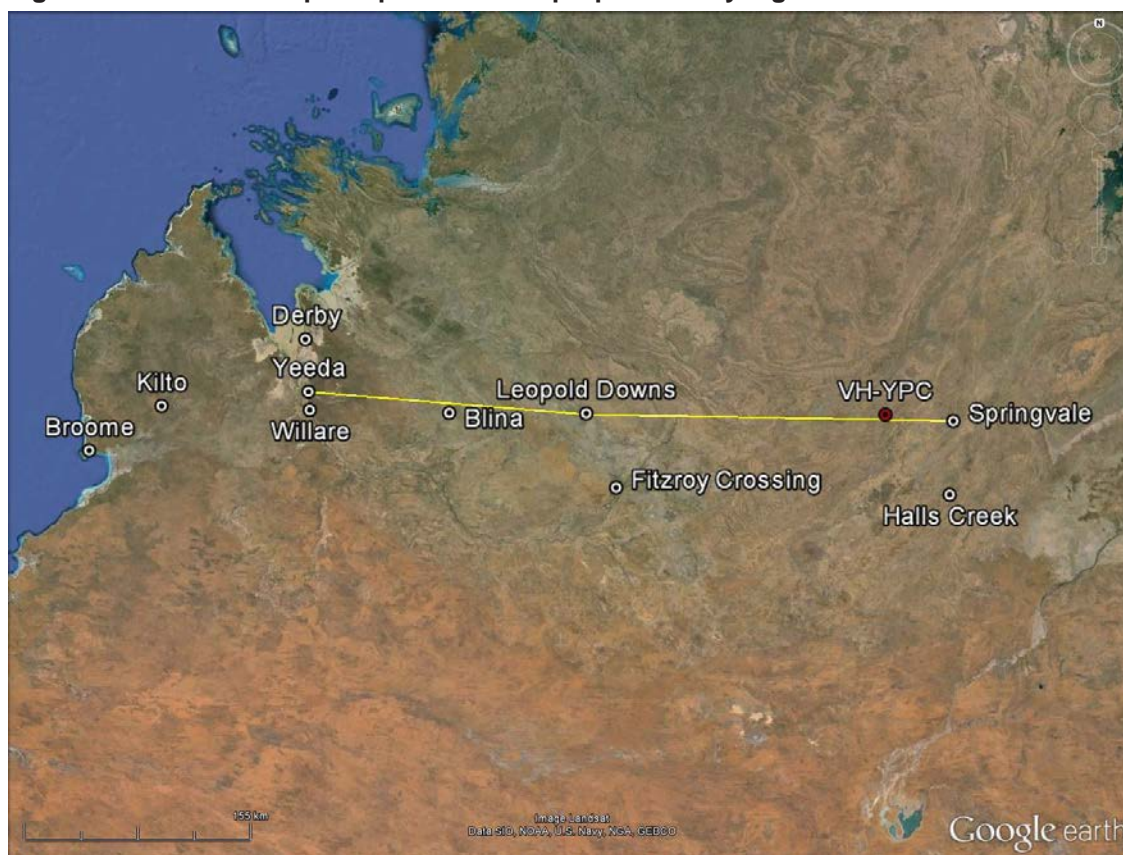
## The occurrence

In August 2014, a pastoral company was using two Robinson R22 helicopters for aerial stock mustering and other cattle station-related activity on various company-operated properties in the Kimberley region of Western Australia. This flying was conducted as a private category operation under the visual flight rules (VFR)<sup>1</sup> by three employees of the pastoral company. These employees each held a Commercial Pilot (Helicopter) Licence without night or instrument flying ratings and were involved in the pastoral operation as general manager, station manager, and station pilot respectively.

On Friday 22 August, both helicopters were used to muster cattle at Yeeda, 35 km south of Derby. Following the muster, the general manager flew one of the R22s, registered VH-YPC (YPC), to Kilo, 58 km north-east of Broome. His intention was to return the helicopter to Yeeda after the weekend.

No flying was recorded over the weekend and the two other pilots who remained at Yeeda were involved in cattle work near the homestead. By the end of the weekend, the general manager had confirmed arrangements for the two other pilots to ferry the helicopters on Monday 25 August from Yeeda to Springvale, 49 km north of Halls Creek, in readiness for a muster the following day (Figure 1). This ferry flying was to follow some tasks that the general manager expected would be complete by midday and leave sufficient time for the station manager and station pilot to fly to Springvale.

**Figure 1: Area of helicopter operation with proposed ferry flight route**



Source: Google Earth, modified by the ATSB

<sup>1</sup> Visual flight rules (VFR) are a set of regulations which allow a pilot to only operate an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.

On Monday morning, 25 August 2014 the general manager was involved in fighting fires in the Broome area and was unable to relocate the helicopter to Yeeda. Instead, the general manager arranged for the station pilot to drive to Kildo, fly some station personnel around local fires in YPC, then return in the helicopter to Yeeda for the ferry flight. In the meantime, the general manager expected that the station manager would use the remaining helicopter to move some cattle over the highway south of Yeeda and would also be finished by midday.

These arrangements were altered by the station manager who arranged instead for the station pilot to move the cattle on his way back from Kildo. On completion of the assigned tasks the station pilot arrived back at Yeeda at about 1415 Western Standard Time<sup>2</sup>. He handed over YPC to the station manager, who refuelled it and departed for the ferry flight via nearby Willare Bridge Roadhouse to pick-up some batteries for his headset. Due to an easterly wind at ground level, the pilots expected a headwind over much of the route and intended to stopover at Leopold Downs for fuel.

Although the station manager had prepared the other helicopter, the station pilot needed to collect his personal belongings then warm up the helicopter before departure. As a result the station pilot departed at about 1445, about 20 minutes later than the station manager.

After departure the two pilots were unable to communicate by very high frequency (VHF) radio. Given the un-usability of the ultra high frequency (UHF) radio in the station pilot's helicopter and the limited mobile phone coverage later in the flight, the pilots arranged by mobile phone to both land at Blina station, which was close to the intended track, to troubleshoot the radio problem.

The station manager was the first to arrive at Blina at about 1515. At about the same time another R22 pilot landed at Blina and he recalled chatting to the station manager who was in good spirits and was conscious of the passing time and remaining distance to Springvale. The station pilot arrived at about 1530 and the pilots attempted to resolve the VHF issue. No problem was found and VHF transmit/receive was satisfactory. They considered that the VHF problem might have been linked to their relative positions and distance apart, so the station pilot departed first with the station manager a few minutes behind.

The station pilot arrived at Leopold Downs soon after 1620 and refuelled from a drum without shutting down. After filling the main tank he moved the helicopter off the pad to allow the other helicopter to refuel. The station manager filled both tanks from the same drum with the assistance of an R22 pilot based at Leopold Downs. That pilot recalled that the station manager was in high spirits and while concerned about the headwind did not talk about staying at Leopold Downs, as he had done on other occasions.

The station pilot departed first and while the time is uncertain it was likely to have been around 1645. His recollection of the global positioning system (GPS)-calculated arrival time for Springvale was uncertain but he expected that the headwind would weaken during the flight, as it had done previously, and result in an earlier arrival time. The station pilot had travelled about 6 NM (11 km) or 5 minutes flying time when the station manager reported lifting off at Leopold Downs.

The pilots were not in the habit of compiling a flight plan using forecasts or keeping a navigation log, and there was no evidence of any such process for these flights. Both pilots were familiar with the Leopold Downs to Springvale track and would have expected the 131 NM (242 km) distance to be covered in about 1.5 hours. This equates to a ground speed of 87 kts, which is close to that expected for nil wind.

The station pilot understood last light at Springvale to be 1750 and considered that there would be sufficient light to land by 1800 at the latest. It was not known if the station manager was aware of last light at Springvale or if he had in mind a last landing time.

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<sup>2</sup> Western Standard Time (WST) was Coordinated Universal Time (UTC) +8 hours.

The pilots remained in VHF contact with no indication of any helicopter problem or expressed concern about the projected arrival times. It is likely that the gap between the helicopters widened as the following helicopter had more fuel on board and thus slightly less airspeed. As the natural light diminished, the pilots climbed to ensure terrain clearance so the lead helicopter was at 4,000 ft and the other helicopter was at 3,500 ft.

When the lead helicopter was about 27 NM (50 km) from Springvale, the station manager in the following helicopter advised by radio that he had turned off the GPS so there wasn't a bright object in the cockpit and that he was following the tail-light of the lead helicopter. There was no indication of duress.

When the lead helicopter was about 17 NM (31 km) from Springvale the station manager in the following helicopter broke off VHF contact with the station pilot to talk to the Springvale manager on the ground at Springvale using UHF. The Springvale manager received the call at about 1800 and recalled that it was a short transmission with poor reception. He understood the call to be a routine inbound report, and that the lead helicopter was about 10 minutes out, followed by the caller 5 minutes behind. There was no indication of duress. This was the last reported communication with the station manager in YPC.

The station pilot stated that he had a good horizon inbound to Springvale and could see the lights of Halls Creek to the south and some other unidentified lights to the north of the homestead. He maintained altitude until he was close to the station homestead to avoid terrain and was able to use the spotlight near the helipad for descent guidance and landing. The landing time was variously reported as around 1805 or 1810. The total time from engine start at Yeeda to engine stop at Springvale was calculated to be 3.7 hours.

The following helicopter did not arrive in the expected timeframe and, after various attempts to contact the pilot, the authorities were alerted that night. At first light the next morning the station pilot at Springvale and the R22 pilot at Leopold Downs were tasked to fly along the direct track to search for the overdue helicopter. Another helicopter pilot joined the search and at about 0700 a burnt area and accident site was located (Figure 2). The station manager was fatally injured and the helicopter was destroyed.

**Figure 2: Overview of accident site (circled, from the north)**



Source: Western Australia Police, modified by the ATSB



# Context

## Environmental conditions

On 25 August 2014 a high pressure system was directing moderate to fresh east to south-east winds over the Kimberley district. Conditions were sunny with maximum temperatures reaching the low to mid thirties (degrees Celsius). While in some areas smoke was expected to reduce visibility to 8 km and in the vicinity of bushfires to 2,000 m, there was no smoke reported in the Springvale area.

The surface winds at Fitzroy Crossing and Halls Creek, located to the south of the Yeeda-Springvale route, were observed to be around 10 kt, which was consistent with the respective aerodrome forecasts.

At 1300, the wind at 5,000 ft above Broome and Halls Creek was generally from the east at 15 kt. By 1900 at Broome, this had increased in strength to be around 20 kt. These observations indicate that the winds at 3,000 ft and 5,000 ft did not tend to decrease after 1300 as was expected by the two pilots flying to Springvale. While not accessed by the two pilots, the area forecast for the Kimberley area valid until 2400 indicated the winds at 3,000 ft and 5,000 ft would be from the east at 25 kts.

For aviation purposes, night is defined as the period of darkness from the end of evening civil twilight, also known as last light, to the beginning of morning civil twilight. For the end of evening civil twilight, the sun is calculated to be 6° below an ideal horizon. At this time, in the absence of moonlight, artificial lighting or adverse meteorological conditions, the illumination is such that large objects can be seen but no detail is discernible.

Last light varies according to location and season and can be determined from charts or online sources such as Airservices Australia and Geoscience Australia. According to the Airservices Australia flight briefing website, last light at Springvale homestead on the day of the accident was 1742 and last light at the accident site was 1744.

When the sun is calculated to be 12° below an ideal horizon that instant is described as 'end of evening nautical twilight'. At this time, for normal practical purposes and in standard conditions, it is dark. This was calculated to occur at the accident site at 1810.

Moonrise/moonset timing was available from Geoscience Australia and from the GPS receiver mounted in the helicopter that arrived at Springvale. For the day and location of the accident, the moon set at 1708 and was not due to rise until 0549 the next day. Consequently, there was no moonlight for the parts of the flights conducted after last light.

Sunset, or when the sun's disk disappeared below an ideal horizon, was available from Geoscience Australia and the GPS receiver mounted in each helicopter. Sunset at Springvale that day was specified as 1721.

## Accident site and wreckage information

The accident site was on hard flat land, 25 NM (45 km) to the west of Springvale and just north of the direct Leopold Downs-Springvale track. From the initial impact point the wreckage trail and post-impact fire damage extended to the west, generally opposite to the expected direction of travel. The wreckage was distributed over an area of about 50 m long and 12 m wide.

The cockpit/cabin was severely disrupted early in the sequence, leaving the airspeed indicator captured near the 100 kt marking. The forward part of the left skid was also broken off early in the sequence while the corresponding right skid remained attached to the main skid-landing gear assembly.



The tail boom was detached as an assembly and located past the main wreckage. There was no evidence of a main rotor blade strike to the tail.

Both main rotor blades were still attached to the hub. Each was severely damaged with part of one blade torn off and located near the main wreckage.

The wreckage trail and damage pattern were consistent with a high-speed impact with a nose-down, left skid-low attitude (Figure 3).

**Figure 3: Wreckage trail with initial ground impact in the foreground (looking west)**



Source: Western Australia Police

## Regulatory requirements

A pilot who did not hold a night visual flight rules (VFR) rating or instrument rating was not permitted to depart on a flight before first light or after last light, and was also not permitted to depart unless the estimated time of arrival for the destination was at least 10 minutes before last light.

For flights away from the vicinity of an aerodrome, pilots were required to carefully study operational information such as current weather reports and forecasts for the route to be flown and to plan the flight using that information. In the case of a VFR flight without the need of Air Traffic Services (ATS), submission of flight details to ATS was not required.

# Safety analysis

## Introduction

The high-speed impact in a nose-down, left-skid-low attitude indicated that the pilot collided with terrain with substantial energy consistent with delivery of engine power to the rotors and at least some control. The analysis following examines the circumstances of the occurrence to identify the contributing factor(s) and any safety implications.

## Collision with terrain

The precise time of the accident was unknown but was estimated using the arrival time of the lead helicopter, the location of the accident site, and the likely gap between the helicopters. This gap had probably extended to be at least 10 NM (18 km) late in the flight because the following helicopter was carrying more fuel. Given the accident site was 25 NM (50 km) from Springvale, this gap between the helicopters meant that the lead helicopter would have been about 15 NM (28 km) or 10 minutes flying time from Springvale when the accident occurred. Put another way, the time of the accident was approximately 10 minutes before the arrival time of the lead helicopter at Springvale.

Based on the reported arrival times of the lead helicopter of 1805 or 1810, the time of the accident can then be placed at either 1755 or 1800 respectively. However, the Australian Transport Safety Bureau considered that if the lead helicopter departed Leopold Downs at about 1645, and the nil-wind flight time was about 1.5 hours, then the arrival time would have been no earlier than 1815 and the accident no earlier than 1805. With a persistent headwind, as was reported, those times would have been later. This was consistent with an engine shutdown time for the lead helicopter of 1825, derived from a departure time of 1445 at Yeeda and calculated total helicopter operating time of 3.7 hours.

Either way, the accident time is after the specified last light for Springvale (and the accident site), which means that both pilots were flying at night and in dark night conditions at the time of the accident. In such conditions the available visual references for establishing an aircraft's attitude and position are degraded or absent. A lack of visual references significantly increases the risk of pilot disorientation and consequent loss of control. The inherent instability of a helicopter has the potential to increase that risk.

Although YPC was equipped with an attitude indicator/artificial horizon that could be used for instrument flying, the pilot had not received any related training, reducing the likelihood that the pilot might have been able to use this instrument to maintain the helicopter's attitude. This was consistent with the experience of the pilot in the other helicopter who did not use the instruments for attitude reference. In both helicopters, then, the pilots were likely solely reliant on external visual cues to maintain control.

As the visibility diminished and ground features became indistinct after last light, the pilots relied more on the distant horizon for orientation and climbed to ensure terrain clearance. After last light a horizon remains visible for a short period of time defined by the end of nautical twilight and contingent on other factors such as altitude, terrain, atmospheric conditions, moonlight or other ambient lighting, and direction of sight. A pilot's ability to see a horizon at night will also be affected by the intensity of their aircraft's lighting, especially lights in the cockpit and external lights such as landing lights reflected into the cockpit.

By 1810 on the day of the accident there was effectively no sunlight remaining to illuminate a horizon (end of nautical twilight) in the Springvale area and there was no moonlight. Consequently it was a dark night and, without ground lighting in the immediate area, it would have been almost impossible to maintain control using external visual cues.

Although the pilots were heading to the east, away from the sunset and its residual light, the station pilot reported having a horizon and sighting the distant lights of Halls Creek. This was apparently sufficient for the pilot to maintain control in cruise until he was close to Springvale homestead and able to use the spotlight on the shed to orientate the helicopter during descent and landing.

The station manager was in a more difficult position as he was probably about 10 NM (18 km) behind. He had reported turning off the helicopter's global positioning system (GPS) receiver due to display brightness and that he was following the lead helicopter's tail-light. While it is not known if the station manager had identified the tail-light correctly it indicates that it was fairly dark by then, with some distance still to run to Springvale.

The station manager's last reported radio transmission was not clear but gave the impression that both helicopters were inbound, with the lead helicopter due in 10 minutes and the following helicopter 5 minutes later. It was soon after that last radio call that the station manager got into serious difficulty. The distant horizon in the direction of travel was fading and the ground features were progressively becoming less recognisable. If the cockpit and/or landing lights were on, it would have reduced the pilot's night vision. Alternatively, if the cockpit lights were off, the pilot would have been denied information from the aircraft's flight instruments. And, if the landing lights were off, the pilot would not have been able to sight the ground when approaching it.

In this context it is not known if the pilot intended to descend from his last reported cruise altitude of 3,500 ft or intended to reverse direction. One scenario is that the fading horizon to the east prompted him to change heading to the west for a more distinct horizon while descending to make visual contact with the ground. Another possibility is that the pilot became disoriented during cruise and lost awareness of the helicopter's attitude and height relative to the ground. Whatever the intentions, in the absence of visual cues, the pilot inadvertently allowed the helicopter to develop a high rate of descent and was unaware of the proximity of the ground.

## Safety considerations

The development of this accident began earlier in the day with the tasks allocated to the station pilot in YPC taking longer than anticipated. This delayed both pilots because the station manager waited at Yeeda so that the pilots could travel in company, as was their practice for long flights in remote areas. After departure, the station manager was delayed a further 15-20 minutes by the stopover at Blina to ensure that radio communication between the helicopters could be maintained. In addition to the delays, the ground speed was reduced by headwinds over the entire route and required the planned refuel stop at Leopold Downs.

The combined effect of the delays and headwind was that the pilots were still some distance from Springvale when daylight officially ended. While the delays and headwind played a part in the development of the accident, those events and conditions were considered to be normal and manageable and were therefore not the influential or important factors in the occurrence.

The critical point in the sequence of events leading up to the accident is the departure from Leopold Downs without sufficient time to complete the flight in daylight and without an effective contingency plan (in simple terms, a 'Plan B'). A significant influence on the pilots' decision making was an expectation that the easterly wind was going to abate during this flight with an associated increase in ground speed and improvement to the arrival time. This was based on substantial previous experience and was theoretically possible. However, the situation did not improve and the pilots continued towards the destination and into developing darkness.

Although the pilots had not obtained the current weather reports and forecasts and therefore could not plan with that information, as required, they were familiar with the route and were aware of the easterly winds affecting the region. When considered along with the ground speed, arrival time, and indicative sunset information provided by the onboard GPS receivers, there was enough

information available for the pilots to determine that their arrival at Springvale was going to be in darkness.

It is evident that the pilots were motivated to arrive at Springvale that night but there was no apparent pressure on the pilots to do so. The mustering program was reported to be flexible enough to allow for a later start should the pilots have stayed overnight at Leopold Downs or camped somewhere along the way. While bush camping was a realistic option, the pilots had not specifically prepared for it and would have been concerned about their ability to communicate any revised details to Springvale.

It is not uncommon for visual flight rules (VFR) pilots to press on to the intended destination in deteriorating weather conditions, especially after the half-way point.<sup>3</sup> This tendency could also apply to fading daylight and might have been reinforced by the availability of GPS information that can compensate for the navigational difficulties usually associated with degraded visibility.

No specific information was available about the pilots having any previous night flying experience but there were indications that day VFR pilots operating in the pastoral industry were not strictly limited to the period between first and last light. This is probably associated with an unstructured operating environment and a reliance on aircraft to accomplish key tasks such as aerial stock mustering. Although aircraft operators are not required to have documented policy and procedures for private category operations, they can reduce the risk of their operations by insisting that their pilots operate within the regulatory framework. And, without taking away the responsibility of the pilot in command to ensure the safety of a flight, the other people working with pilots in the pastoral industry can cooperate to further minimise the operational risks.

Some day VFR pilots might have flown at night and survived, perhaps with an element of luck, but there is no guarantee that those or other pilots without a night VFR or instrument rating can fly safely at night. This was demonstrated on 27 July 2011 when the pilot of an R22, registered VH-YOL, was attempting to fly visually at low level on a dark night in an area that did not contain any local ground lighting. About halfway into the flight to Brooking Springs, the pilot inadvertently allowed the helicopter to develop a high rate of descent, resulting in a collision with terrain. The ATSB found that the 3,500-hour pilot was operating at night without the appropriate training or qualification in a helicopter that was not suitably equipped (ATSB Transport Safety Report AO-2011-087).

And previously, on 6 October 2005, the pilot of an R22, registered VH-HUZ, was attempting to fly visually at low level on a dark night. The pilot became disorientated at a height from which recovery was not possible before the helicopter impacted the ground. The ATSB found that the 9,000-hour pilot was operating at night without the appropriate training or qualification in a helicopter that was not suitably equipped (ATSB Transport Safety Report 200504925).

Disorientation at night is not limited to pilots without night VFR ratings. On 18 August 2011, a Twin Squirrel helicopter, registered VH-NTV, was being operated under the night VFR in an area east of Lake Eyre, South Australia. Soon after departure in dark night conditions the experienced night VFR-rated pilot initiated a right turn then probably became spatially disoriented. The helicopter impacted terrain at high speed with a bank angle of about 90°, fatally injuring the pilot and the two passengers, and destroying the helicopter (ATSB Transport Safety Report AO-2011-102).

Night flying in remote areas is an inherently high risk operation due to the absence or degradation of the visual references for establishing an aircraft's attitude and position. This risk is increased to unacceptable levels when night flying is attempted by pilots without night VFR or instrument flying qualifications.

To avoid the usually fatal consequences of disorientation, day VFR pilots need to plan to arrive at their destination at least 10 minutes before last light and to have a realistic 'Plan B' to use when it

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<sup>3</sup> ATSB Aviation Research Investigation Report B2005/0127 *General aviation pilot behaviour in the face of adverse weather*. Available at [www.atsb.gov.au](http://www.atsb.gov.au).



becomes apparent that an intended flight cannot be completed in daylight. It is important, also, for operators and others involved in the operation of aircraft to actively support safety-first pilot decision making.

The ATSB is concerned about the frequency of accidents – many fatal – that involve pilots flying with reduced visual cues. This has been highlighted on the ATSB website as a SafetyWatch priority along with a number of strategies to help manage the risk and links to relevant safety resources.

# Findings

From the evidence available, the following finding is made with respect to the collision with terrain in dark night conditions involving Robinson R22, registered VH-YPC, which occurred 70 km north-west of Halls Creek, Western Australia on 25 August 2014. The finding should not be read as apportioning blame or liability to any particular organisation or individual.

## Contributing factor

- The pilot, who did not hold a night visual flight rules rating or instrument rating, continued flying towards the destination after last light (end of civil twilight), then in dark night conditions without local ground lighting, inadvertently allowed the helicopter to descend into terrain.

# General details

## Occurrence details

Date and time:	25 August 2014 – Approximately 1810 WST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	70 km north-west of Halls Creek, Western Australia	
	Latitude: 17° 45.020' S	Longitude: 127° 15.232' E

## Pilot details

Licence details:	Commercial Pilot (Helicopter) Licence, issued December 2009
Endorsements:	Robinson R22 and R44
Approvals:	Low Flying (Helicopter) Training completed November 2009 Approval - Aerial Stock Mustering issued April 2011
Medical certificate:	Class 1, valid to February 2015
Aeronautical experience:	1,036 hours
Last flight review:	June 2013

## Aircraft details

Manufacturer and model:	Robinson Helicopter Company R22 Beta II	
Year of manufacture:	2011	
Registration:	VH-YPC	
Operator:	Private	
Serial number:	4507	
Total Time In Service	1,198 hours (as of last maintenance release issue on 13 August 2014)	
Operational limits	VFR Day, Charter	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – 0
Injuries:	Crew – Fatal	
Aircraft damage:	Destroyed	

# Sources and submissions

## Sources of information

The sources of information during the investigation included the:

- pilot of the other R22
- pastoral company general manager (operator of VH-YPC)
- Western Australia Police
- Bureau of Meteorology
- Civil Aviation Safety Authority (CASA).

## Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003* (the Act), the Australian Transport Safety Bureau (ATSB) may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the other R22 pilot, operator of VH-YPC, and CASA. No submissions were received from those parties.



# Australian Transport Safety Bureau

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; 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.

## Purpose of safety investigations

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the 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.

## Developing safety action

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. The ATSB prefers to encourage the relevant organisation(s) to initiate proactive safety action that addresses safety issues. Nevertheless, the ATSB may use its power to make a formal safety recommendation either during or at the end of an investigation, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation.

When safety recommendations are issued, they focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on a preferred method of corrective action. As with equivalent overseas organisations, the ATSB has no power to enforce the implementation of its recommendations. It is a matter for the body to which an ATSB recommendation is directed to assess the costs and benefits of any particular means of addressing a safety issue.

When the ATSB issues a safety recommendation to a person, organisation or agency, they must provide a written response within 90 days. That response must indicate whether they accept the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

The ATSB can also issue safety advisory notices suggesting that an organisation or an industry sector consider a safety issue and take action where it believes it appropriate. There is no requirement for a formal response to an advisory notice, although the ATSB will publish any response it receives.

## Investigation

### **ATSB Transport Safety Report**

Aviation Occurrence Investigation

Collision with terrain in dark night conditions involving Robinson R22 helicopter, VH-YPC, 70 km north-west of Halls Creek, Western Australia, 25 August 2014

AO-2014-144

Final – 16 December 2014

## Australian Transport Safety Bureau

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