Australian Government
Australian Transport Safety Bureau

Safety Advisory Notice

Robinson Helicopter pilots and operators

Number: AO-2023-051-SAN-001

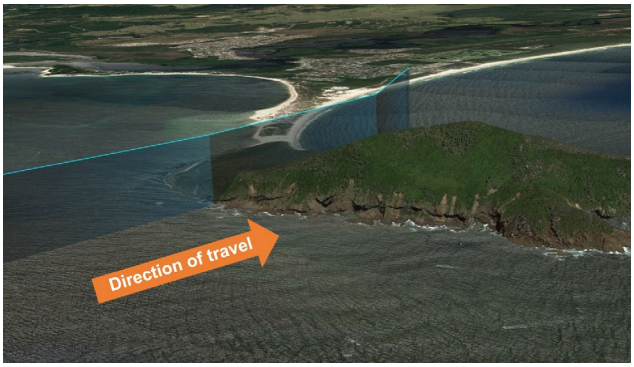
Anticipate turbulence and slow down

Although further analysis is required to establish the contributing factors in this accident, the circumstances as far as they are known at this time suggest that the helicopter encountered turbulence, followed by a low-g condition immediately prior to the in-flight break-up. The ATSB therefore considers it prudent to draw attention to Robinson's advice regarding flight in turbulent conditions and avoidance/recovery from low-g flight until such time as the factors that contributed to this accident can be fully established.

Awareness of conditions likely to produce turbulence, and slowing down prior to encountering turbulence, could increase the time available to recognise and respond to a low-g condition in Robinson Helicopters.

What happened

On 26 October 2023, the pilot of a Robinson R66 helicopter encountered mechanical turbulence flying over Yacaaba Headland, NSW, which resulted in a rapid loss of control and subsequent in-flight break-up.



Source: ATSB

Why did it happen

Prior to encountering turbulence, the aircraft was traveling at an airspeed which may have increased the severity of the aerodynamic effects of the turbulence. This possibly reduced the time available for the pilot to recognise and recover from a low-g condition, and avoid a loss of control.

Safety advisory notice

AO-2023-051-SAN-001: The ATSB advises all operators of Robinson helicopters to be aware of the possibility of mechanical turbulence and avoid it whenever possible. If it is not possible to avoid flying through an area where mechanical turbulence is anticipated, reduce airspeed to 60–70 kt in accordance with Robinson Safety Notice 32, prior to encountering turbulence.

Slow down prior to suspected turbulence

Robinson Helicopters' handling characteristics in low-g and turbulent conditions are well documented and detailed in Robinson Helicopter Safety Notices SN-11 & SN-32 respectively. In both cases an increased airspeed affects the severity of the resulting aircraft response, and increases the likelihood of mast bumping and in-flight break-up.

It is possible that, at high airspeeds, an encounter with turbulence may produce a reaction that requires an immediate and decisive response from the pilot to ensure the safety of flight. As outlined in Robinson Safety Notice 11, a low-g (weightless) condition can result in a powerful right roll. In such circumstances, 'The rotor must be reloaded before lateral cyclic can stop the right roll. To reload the rotor, apply an immediate gentle aft cyclic, but avoid any large aft cyclic inputs.'

As airspeed increases, the time available for the pilot to recognise and respond to undesirable aircraft states is significantly reduced.

Pilots are reminded to remain vigilant at all times and to continuously assess conditions to identify the possibility for turbulence. Where any doubt exists, pilots should reduce airspeed prior to entering an area with potential for turbulence to reduce the effects of, and increase the available response time to, an upset condition.

Read more about this ATSB investigation: Loss of control and in-flight break-up involving Robinson R66, VH-KFT, near Hawks Nest, New South Wales, on 26 October 2023

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