



# Collision with terrain

## Dorrigo, NSW

### 9 December 2009

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## Abstract

On 9 December 2009, the pilot of a Bell Helicopter Co. 206L-1 Longranger, registered VH-MJO, was conducting a visual flight rules (VFR) flight at Dorriggo NSW, with one passenger on board. Shortly after takeoff, he encountered reduced visibility conditions due to low cloud. Subsequently, all visual reference with the horizon and the ground was lost. The pilot attempted to conduct a landing but the helicopter impacted the ground with a significant vertical force. As a result, the pilot was seriously injured and the passenger was fatally injured. The helicopter was seriously damaged. The investigation is continuing.

## FACTUAL INFORMATION

*The information contained in this preliminary report is derived from initial investigation of the occurrence. Readers are cautioned that there is the possibility that new evidence may become available that alters the circumstances as depicted in the report.*

## History of flight

On 9 December 2009, a Bell Helicopter Company 206L-1 Longranger, registered VH-MJO, was contracted by the NSW National Parks and Wildlife Service to conduct fire observation, water bombing and personnel insertion duties. The helicopter was being operated from a landing and take-off point adjacent to the Dorriggo National Parks and Rainforest Centre in NSW, to fires located to the north-west.

At approximately 1120 Eastern Daylight-saving Time,<sup>1</sup> during the second visual flight rules (VFR) flight from Dorriggo that day, and with one passenger on board, the pilot lost all visual reference with the horizon and the helicopter impacted the ground.

The pilot later stated that, shortly after takeoff, while the helicopter was in a high hover, he looked inside the cockpit at his instruments for a few seconds. When the pilot looked outside again, the helicopter was in what he described as 'white out conditions<sup>2</sup>'. The pilot experienced a complete loss of visual orientation with the surroundings due to the helicopter being enveloped by cloud.

The pilot attempted to maintain a neutral hover in the expectation of regaining adequate visibility to land, however, the helicopter was inadvertently moving to the north at a slow speed (Figure 1). The pilot stated that he then saw trees and a spur line through the cloud and that the helicopter appeared to be in a sideways crab motion to the left. With limited visual reference, the pilot attempted to land, however, the helicopter impacted the ground with significant vertical force and came to rest on its right side (Figure 2).

A witness who saw the helicopter take off, stated that he subsequently lost sight of the helicopter

1 The 24 hour clock is used in this report to describe the local time of day, Eastern Daylight-saving Time (ESuT), as particular events occurred. Eastern Daylight-saving Time is Coordinated Universal Time (UTC) + 11 hours.

2 Loss of orientation with respect to the horizon caused by overcast sky and sunlight reflecting off snow.

due to low cloud. He then heard the helicopter impact the ground a few seconds later. The witness contacted the National Parks and Rainforest Centre for assistance, then drove to where he thought the helicopter was located. He was the first person to arrive at the accident site and stated that he saw the pilot walking towards him from the direction of the helicopter. The pilot was taken to the local hospital and then airlifted to Coffs Harbour hospital for further treatment.

## Injuries to persons

The pilot sustained serious injuries; the passenger was fatally injured.

## Recorded information

The helicopter was fitted with a Garmin 296 Global Positioning System (GPS). The GPS was taken to the Australian Transport Safety Bureau (ATSB) technical facilities where its stored data was successfully downloaded. The data showed the helicopter's movements on the day of the accident. The information included time and date, latitude, longitude and altitude position which was recorded at distance intervals of 0.1 NM (185 m). The GPS recorded five positions during the accident flight and the information was overlaid on a Google Earth map of the area<sup>3</sup> (Figure 1). The duration of the flight, not including start up and static hover, was approximately 1 minute and 20 seconds. During that time, the helicopter travelled a distance of approximately 550 m.

## Pilot details and information

The pilot held a current Commercial Pilot (Helicopter) license issued in November 2003. According to his pilot log book, he had a total of 4073.5 hrs flying experience as at 24 September 2009. He was endorsed on the Bell 206L helicopter and held a current Class 1 medical certificate without any restrictions issued by the Civil Aviation Safety Authority (CASA). The pilot reported that he had a reasonable sleep on the night prior to the accident. He also reported that

he did not believe there were any mechanical defects with the helicopter prior to or during the accident flight.

## Weather conditions

The weather in the area at the time of the accident was described by witnesses as being highly variable in visibility due to low cloud that was 'wisping' in and out of the escarpment that was adjacent to the helicopter's operational area. The wind was reported to be light and variable causing the low cloud to move in an unpredictable manner.

## Wreckage and impact information

The helicopter was seriously damaged<sup>4</sup> by impact forces (Figure 2). Examination of the wreckage showed that the vertical fin assembly, main rotor assembly, skid gear and observer's side door had separated from the helicopter during the accident sequence. The tail boom showed signs of downward bending and the skid gear cross tubes had been rotated and splayed, indicating a high vertical decent rate at impact. The lack of ground impact marks outside the immediate wreckage area also indicated a low forward velocity when the helicopter impacted the ground. The extent of damage observed on the main rotor blades indicated that the engine was operating at impact.

## Ongoing investigation activities

The investigation is continuing and will include further examination and analysis of the:

- accident and impact sequence
- recorded data
- helicopter maintenance history
- pilot background and experience
- survivability issues
- available meteorological information
- suitability of helicopter take-off and landing site.

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<sup>3</sup> The GPS recorded 5 positions during the period of the accident flight, the red line depicting the helicopter's flight path, while reasonably accurate at the points recorded, does not accurately illustrate the position of the helicopter at any point between the recorded locations.

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<sup>4</sup> The Australian Transport Safety Regulations 2003 definition of 'serious damage' includes the destruction of a transport vehicle.

Figure 1: Helicopter GPS track

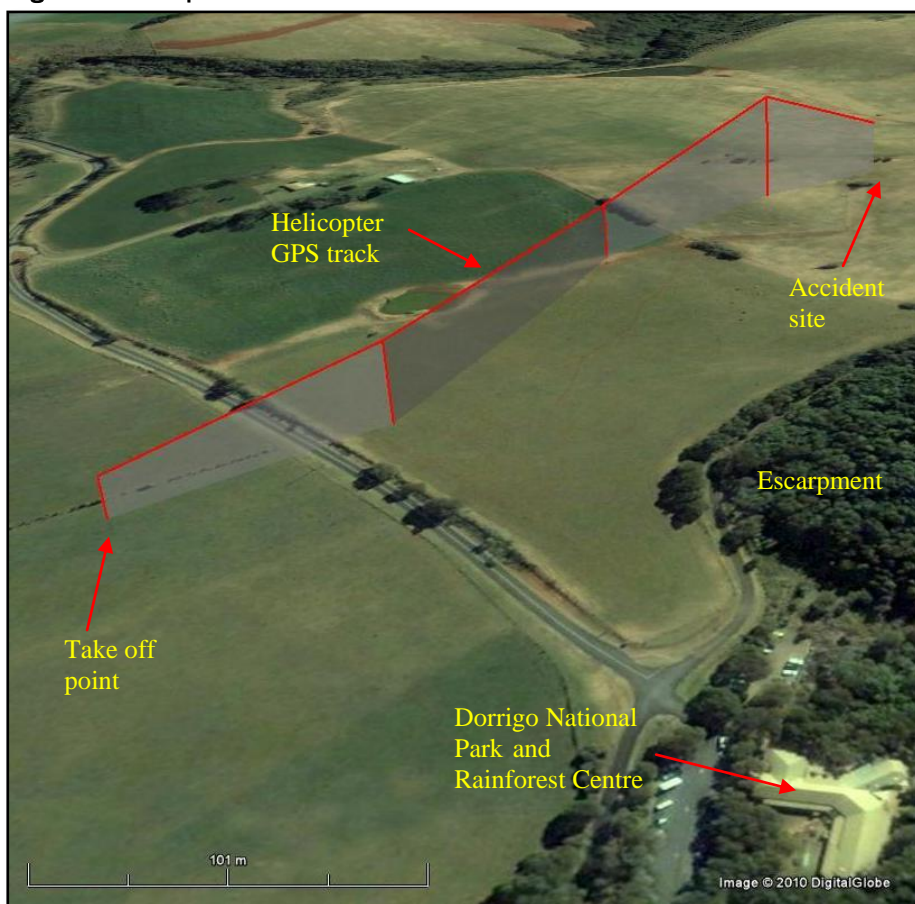


Photo courtesy of Google Earth

Figure 2: Accident site

