



Australian Government

Australian Transport Safety Bureau

In-flight break-up involving a Bell 206L1 LongRanger, registered VH-ZMF

Near Maroota, New South Wales, on 9 July 2022

ATSB Transport Safety Report
Aviation Occurrence Investigation
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Addendum

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Preliminary report

This preliminary report details factual information established in the investigation’s early evidence collection phase, and has been prepared to provide timely information to the industry and public. Preliminary reports contain no analysis or findings, which will be detailed in the investigation’s final report. The information contained in this preliminary report is released in accordance with section 25 of the *Transport Safety Investigation Act 2003*.

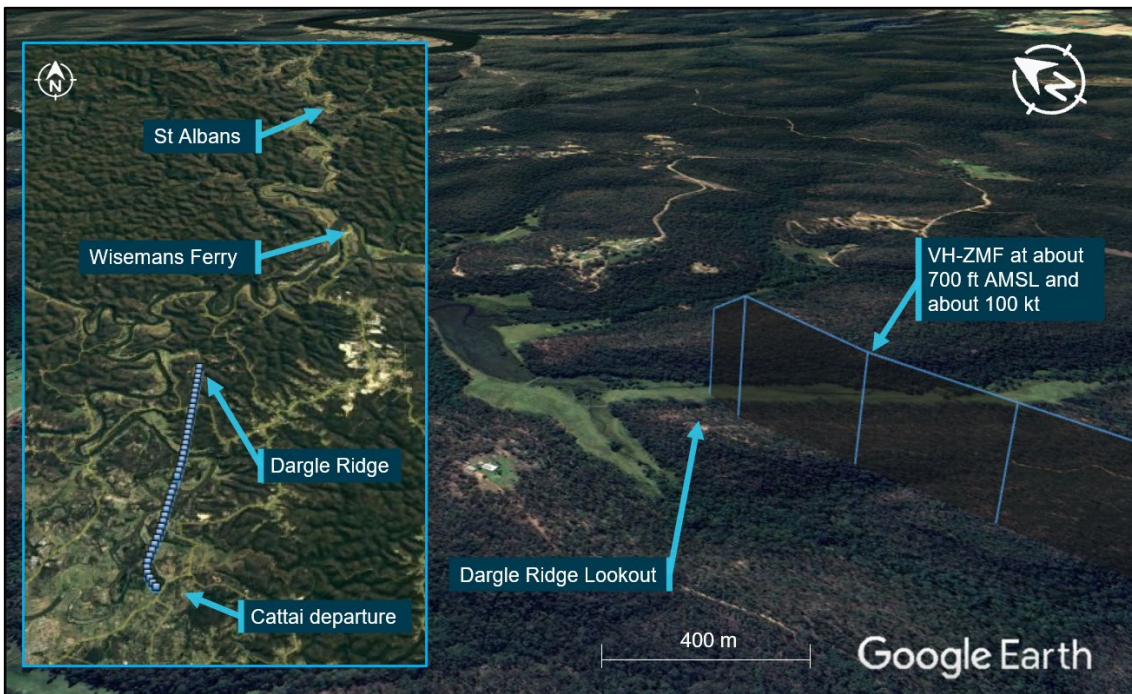
The occurrence

At about 1135 local time, on 9 July 2022, a Bell 206L1 LongRanger, registered VH-ZMF, departed a private helipad at Cattai, New South Wales, for a private flight to a property at St Albans, New South Wales (Figure 1). The pilot was the sole occupant on board.

The pilot departed the private helipad with clearance from air traffic control and tracked to the north towards St Albans, climbing to about 700 ft above mean sea level (AMSL).

A witness to the south of Dargle Ridge observed a helicopter moments before the accident. They recalled it flying straight and level towards the north, and that weather conditions were good, with clear skies and light winds.

Figure 1: VH-ZMF departure and track



Source: Google Earth, with OzRunways data, annotated by the ATSB

After crossing the Dargle Ridge lookout, several witnesses described seeing VH-ZMF enter into a rapid banking turn to the right while pitching up. They heard several rotor beats change tone before a final louder noise.

Witnesses then recalled the helicopter pitching and rolling while descending, with one witness describing separation of the main rotor blades from the helicopter at about the height of Dargle Ridge shortly before impact. A short time later, smoke was observed rising from the area where the helicopter descended. The helicopter was destroyed by a post-impact fire, and the pilot was fatally injured.

Context

Site and wreckage examination

The main accident site, including the engine, main cabin and fuselage, was located in relatively flat and open farmland, between 2 ridgelines (Figure 2). The tail rotor assembly, vertical stabiliser and a section of the tail boom were found about 93 m to the north, also in open farmland. The main rotor system, including the transmission cowling, gearbox and main rotor blades, was located about 68 m to the west in a heavily-wooded, sloping escarpment.

Figure 2: VH-ZMF accident site



Source: Google Earth with ATSB RPAS picture overlay, annotated by the ATSB

The ATSB conducted an examination of the accident site and wreckage, and identified that:

- ground impact marks indicated that the main aircraft fuselage had impacted terrain in a nose-down attitude
- the vertical stabiliser, aft section of the tail boom, tail rotor and tail rotor gearbox, were severed in flight and found separate to the main wreckage
- the main rotor blades, main transmission and cowling had separated in flight and were found separate to the main wreckage
- no pre-accident defects were identified with flight controls, aircraft structure or engine
- a post-impact fire consumed the cockpit and main wreckage site
- the remnants of a quantity of unburnt Jet A1 fuel had sprayed from the fuel tank on impact at the main site and leaked into the soil.

Several items were recovered from the site for further examination, including:

- an unidentified avian (bird) carcass
- a main rotor blade tip component and section of impacted tail boom
- samples of biological residue found on external helicopter surfaces.

Recorded data

Data collected from radar and aircraft-based sources indicated that VH-ZMF was travelling in a northerly direction at about 100 kt prior to crossing the Dargle Ridge Lookout. The data then showed a track deviation to the right and an increase in 100 ft of altitude coupled with rapid deceleration and an increased vertical descent rate prior to impact with terrain.

Other information

Recovered biological specimens, including the avian carcass and the biological residue found on external helicopter surfaces, were analysed by the Australian Centre for Wildlife Genomics, Airstrike section of the Australian Museum. The carcass and samples taken from the helicopter's main transmission cowling were identified as *Aquila audax* (commonly known as a wedge-tailed eagle).

Further investigation

To date, the ATSB has finalised its on-site evidence collection, interviewed witnesses and collected aircraft parts and biological specimens from site.

The investigation is continuing and will include:

- analysis of recorded flight data
- review of aircraft and maintenance documentation
- review of pilot qualifications and experience
- review of the Australian Museum report on collected biological samples
- examination and analysis of the main rotor blade tip and tail boom impact point.

Should a critical safety issue be identified during the course of the investigation, the ATSB will immediately notify relevant parties so appropriate and timely safety action can be taken.

A final report will be released at the conclusion of the investigation.

Acknowledgements

ATSB would like to acknowledge the assistance of the Australian Museum during the on-site and evidence gathering phases of the investigation.

General details

Occurrence details

Date and time:	09 July 2022 11:44 Eastern Standard Time	
Occurrence class:	Accident	
Occurrence categories:	In-flight break-up	
Location:	19.2 km 042 degrees from Richmond, NSW	
	Latitude: 33° 28.29' S	Longitude: 150° 55.08' E

Aircraft details

Manufacturer and model:	BELL HELICOPTER CO 206L-1	
Registration:	VH-ZMF	
Operator:	Owner	
Serial number:	45285	
Type of operation:	Private	
Departure:	Cattai	
Destination:	St. Albans	
Persons on board:	Crew – 1	Passengers – 0
Injuries:	Crew – 1 (fatal)	Passengers – 0
Aircraft damage:	Destroyed	