Aviation Safety Investigation Report 199601583

Robinson Helicopter Co R22

19 May 1996

Aviation Safety Investigation Report

199601583

Readers are advised that the Australian Transport Safety Bureau investigates for the sole purpose of enhancing transport safety. Consequently, Bureau reports are confined to matters of safety significance and may be misleading if used for any other purposes.

Investigations commenced on or before 30 June 2003, including the publication of reports as a result of those investigations, are authorised by the Executive Director of the Bureau in accordance with Part 2A of the Air Navigation Act 1920.

Investigations commenced after 1 July 2003, including the publication of reports as a result of those investigations, are authorised by the Executive Director of the Bureau in accordance with the Transport Safety Investigation Act 2003 (TSI Act). Reports released under the TSI Act are not admissible as evidence in any civil or criminal proceedings.

NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Aviation Safety Investigation Report

199601583

Occurrence Number: 199601583 **Occurrence Type:** Accident
Location: Bundubaroo Station, 170 km S Charters Towers
State: QLD **Inv Category:** 3
Date: Sunday 19 May 1996
Time: 1130 hours **Time Zone** EST
Highest Injury Level: Fatal
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	1	0	0	0	1
Ground	0	0	0	0	0
Passenger	1	0	0	0	1
Total	**2**	**0**	**0**	**0**	**2**

Aircraft Manufacturer: Robinson Helicopter Co
Aircraft Model: R22 BETA
Aircraft Registration: VH-AVE **Serial Number:** 0839
Type of Operation: Commercial Aerial Mustering
Damage to Aircraft: Destroyed
Departure Point: Bundubaroo Station
Departure Time: 1050 EST
Destination: Bundubaroo Station

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Commercial	6500.0	16169

Approved for Release: Tuesday, February 25, 1997

FACTUAL INFORMATION

History of the flight

The pilot had commenced mustering at about 0700 EST. At about 1030 the aircraft was refuelled to full tanks during a "smoko" break. The pilot's intention was then to muster about 30 head of cattle which had been separated from the main mob. The pilot had agreed to take a passenger on the flight which was expected to be of relatively short duration. The passenger had been holidaying at the property and was keen to experience a helicopter flight. The helicopter became airborne at about 1050 and was last heard at 1115. At 1130 a jillaroo realised she could no longer hear the helicopter and began making enquiries on a hand-held radio. When nothing was heard, she began a search on a trail bike and eventually discovered the wreckage and the deceased occupants at about 1420.

Impact sequence

The tail rotor had struck the top branches of a lone 7-metre high sapling, causing one blade to separate. The tail rotor gearbox then separated and the main rotor struck the tailboom. The wreckage fell to the ground 30 metres beyond the sapling. The right side of the cabin was crushed. There was no fire.

Wreckage examination

The cabin was crushed on the right (pilot's) side by ground impact. The perspex bubble was scattered in front of the main wreckage, which was facing south-south-west. The main rotor blades showed evidence of having struck the tail boom and the cabin structure. The tailrotor drive shaft was recovered and showed evidence of torque twisting, indicating that the tailrotor drive shaft was being driven under power when the tailrotor contacted the tree.

The left side of the passenger seat with the seat lap belt attachment, had detached from the fuselage structure and this allowed the passenger to strike the upper door frame during impact. The control systems were examined and appeared to be functioning normally. The engine governor switch in the end of the collective control was found in the off position.

The engine was removed and examined. There were no defects found which would have precluded normal operation.

Weight and balance

The weight and balance of the helicopter was within the limitations published in the aircraft flight manual.

Emergency locator transmitter (ELT)

The Ack Technologies ELT was found undamaged in the mounting bracket at the rear of the engine bay. The arming switch was found in the off position.

ANALYSIS

Civil Aviation Regulation Section 29.10 states that during aerial stock mustering operations, a pilot shall not carry more than one other person and that that person must be essential to the successful conduct of the operation. In this case, the passenger was not essential to the conduct of the operation. The helicopter had been refuelled to full tanks immediately before the flight and, although within the specified weight limitation, it was much heavier with the additional weight of the passenger than the pilot was accustomed to for mustering. Although the pilot was highly experienced, the resultant reduction in performance may have been a factor in his being unable to avoid the collision with the tree.

There were no witnesses to the accident and the final flight path before the collision with the tree could not be determined. However, it was evident that immediately after the tree was struck by the tailrotor, the helicopter was subjected to violent manoeuvres.

The RPM governor is fitted to the engine to prevent decay of rotor RPM when manoeuvring. The aircraft flight manual states that flight is prohibited with the governor switched off, except when there is a system malfunction or for emergency procedures training. The governor switch was found in the off position, but it may have been bumped to this position in the accident sequence. If it was deliberately switched off for the flight, manoeuvring performance of the helicopter may have been reduced.

The possibility that the pilot may have been attempting a precautionary landing for some reason such as an engine malfunction, was considered. There was no evidence found to substantiate such a possibility.

SIGNIFICANT FACTOR

The tailrotor struck a tree and this precipitated a major structural failure. Why the pilot was unable to avoid the tree could not be determined.