Aviation Safety Investigation Report 198903788

Bell 47-G4A

2 July 1989

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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.

Occurrence Number: 198903788 **Occurrence Type:** Accident
Location: 57 km SSW of Old Arafura NT
Date: 2 July 1989 **Time:** Not Known
Highest Injury Level: Fatal
Injuries:

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

Aircraft Details: Bell 47-G4A
Registration: VH-JWQ
Serial Number: 7710
Operation Type: Aerial Work (Stock Survey)
Damage Level: Destroyed
Departure Point: Old Arafura, 16 km S of Ramingining NT
Departure Time: 1540 (local)
Destination: Old Arafura NT

Approved for Release: 3rd October 1989

Circumstances:

The flight was to survey stock and cull buffalo in an area south-west of the station homestead. After the helicopter failed to return by nightfall, the authorities were notified and a search initiated. The wreckage was located three days later. On-site investigation revealed that the main rotor blades had clipped some small upper branches on a 14 metre high tree before contacting the ground 19 metres further on. The helicopter impacted the ground while banked about 35 degrees to the right and in a nose down attitude of about 35 degrees, but with a flight path substantially closer to horizontal. It then rolled to the right and came to rest against a tree. A severe fire destroyed the cabin/fuselage area. A detailed examination of the engine was not possible because of the extent of fire damage. However, no indication of failure of any major component was noted. Damage to the main rotor blades and ground impact marks from the blades indicated that the blades were being driven by the engine at impact. The state of the tail rotor system indicated that it was intact and also under power at impact. The branches struck by the main rotor blades prior to impact were of insufficient size to have affected the blades or their flight characteristics. The attitude of the helicopter at impact was uncharacteristic for a rotary winged aircraft and indicated that it might not have been under control during the final stages of the flight. This could have been caused by a flight control problem or by some form of pilot incapacitation. Post-impact fire damage to the cockpit/fuselage section precluded a complete examination of the flight control system. No assessment could be made as to the likelihood of pilot incapacitation. A broken engine cooling fan drive belt was found between the tree struck by the main rotor and the initial ground impact point. The other belt was located within the wreckage in its correct position. It could not be established whether the belt was broken and thrown from the helicopter during the impact sequence or whether the belt fell from the helicopter prior to impact. In another recent accident involving the same type of helicopter, the blades on the engine cooling fan had failed. One blade had been thrown against the collective pitch control rod, almost

completely severing the rod. Had fan blade failure occurred in the subject accident, (the broken drive belt could indicate this), and a collective pitch or cyclic control rod been struck and severed by a blade, loss of control of the helicopter could have resulted.

Significant Factors:

The following factor was considered relevant to the development of the accident

1. For reasons which could not be established, the helicopter collided with the ground, probably in uncontrolled flight.