

**Aviation Safety Investigation Report
199600456**

**Hughes Helicopters
Hughes 300**

13 February 1996

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Occurrence Number: 199600456 **Occurrence Type:** Accident
Location: 3.6km W Windellama
State: NSW **Inv Category:** 3
Date: Tuesday 13 February 1996
Time: 1315 hours **Time Zone** ESuT
Highest Injury Level: Fatal
Injuries:

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

Aircraft Manufacturer: Hughes Helicopters
Aircraft Model: 269C
Aircraft Registration: VH-AOC **Serial Number:** 1160561
Type of Operation: Commercial Aerial Agriculture - Other
Damage to Aircraft: Destroyed
Departure Point: Fernleigh Homestead NSW
Departure Time: 1305 ESuT
Destination: Fernleigh Homestead NSW

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Commercial		12600

Approved for Release: Friday, March 7, 1997

FACTUAL INFORMATION

The pilot had positioned the helicopter at "Fernleigh" homestead on the previous Friday and had not flown the helicopter again until the day of the accident. Flying commenced at 0645, with the helicopter being flown to "Bunburra" property to treat serrated tussocks. Operations ceased there at about 0945, and the helicopter was flown back to "Fernleigh". Further flights were carried out until 1200, when flying stopped for a lunch break. Each treatment flight took approximately 10 minutes, with the helicopter returning to reload with chemical.

After the pilot and loader/driver had finished lunch, they refuelled the helicopter. Two further flights were completed before the helicopter took off again at 1305. This was to have been the last flight in the treatment area before moving to a new location. The pilot had advised the loader/driver that during his return from the treatment area, he would inspect for regrowth another area he had previously treated. Before takeoff, the property owner reminded the pilot of the presence of power cables in the area that he was going to inspect. The map location of the cables was not reviewed by the pilot. When the helicopter had not returned by about 1315, the loader/driver and property owner became concerned. Their initial search failed to find the helicopter, but shortly after, the owner of "Belmedie", an adjoining property, advised them that it had crashed.

The helicopter had struck power cables at a height of 26 m whilst tracking in an easterly direction at a calculated airspeed of 45 kts. The power cables were located in the area that the pilot had planned to inspect for regrowth. There were no witnesses to the actual flight path of the helicopter preceding the collision. A witness at "Belmedie" had heard and glimpsed the helicopter near the homestead. Weather conditions at the time of the accident were fine.

The accident site was located on the western side of an open area of rising ground. On both sides of the flight path lay heavily wooded hills. Obstructions to the flight path were two sets of diverging (approximately 46 degrees) 22,000-volt power cables, strung from a pole on the top of a hill to the left of the flight path. The first set, with a span of 224 m, went to the "Belmedie" homestead. The second set, with a span of 428 m, went to a pole on rising ground across and to the right of the flight path.

An engineering examination of the helicopter did not find any anomalies or defects that may have contributed to the accident. Damage to the helicopter structure was consistent with the main and tail rotors having come into contact with power cables. The main rotor blades had initially contacted the power cables, followed by the tail rotor. The cables then passed between the tail-rotor gearbox and the pitch change links around the tail-rotor drive shaft, before breaking. The dynamics of the cable strike resulted in the main rotor slicing off the tail boom forward of the tail-rotor gearbox. Other damage sustained by the helicopter was consistent with severe forces generated during the subsequent ground impact sequence. No emergency locator transmitter (ELT) was fitted.

ANALYSIS

The approach of the helicopter close to the homestead, en route to the inspection site, was consistent with a practice followed by pilots to locate and avoid power cables running to building sites. It would appear that, once having located the power cables to the homestead, the pilot continued towards the area to be inspected. The poles which supported the 428-m cable, which the helicopter struck, were located in heavily wooded areas. The cables could not have been easily seen, due to poor background contrast.

Initial contact with the power cables was by the helicopter main rotor blades, followed by the tail rotor, before the cables broke. The dynamics of the cable impact resulted in the main rotor slicing off the tail boom. As a result, the pilot experienced loss of control as the helicopter was now without directional control, coupled with a significant forward shift of the centre of gravity.

It is likely the pilot either forgot or did not see the second set of cables before colliding with them.

SIGNIFICANT FACTORS

1. The pilot did not adequately establish the location of the power cables prior to the flight.
2. The nature of the terrain in the vicinity of the power cables inhibited the capacity of the pilot to see them.
3. Flight control of the helicopter was lost when the tail boom and tail rotor gear box were severed from the helicopter.