Aviation Safety Investigation Report 199702485

Hughes Helicopters
Hughes 300

27 July 1997

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Occurrence Number: 199702485 **Occurrence Type:** Accident
Location: Mornington Station, 269km E Derby, Aerodrome
State: WA **Inv Category:** 4
Date: Sunday 27 July 1997
Time: 1330 hours **Time Zone** WST
Highest Injury Level: Minor
Injuries:

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

Aircraft Manufacturer: Hughes Helicopters
Aircraft Model: 269C
Aircraft Registration: VH-WAA **Serial Number:** 690805
Type of Operation: Commercial Aerial Mustering
Damage to Aircraft: Substantial
Departure Point: Mornington Station WA
Departure Time: 1300 WST
Destination: Mornington Station WA

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Commercial	1900.0	9000

Approved for Release: Friday, February 20, 1998

The pilot stated that while hovering the helicopter at about 50 ft over a dry river bed, the engine note suddenly changed. He checked the instrument indications which confirmed that the engine RPM had increased. Almost immediately the indications returned to normal. He began to move the helicopter away from trees when the engine RPM again increased as drive to the main rotor system was lost.

During the attempted autorotational landing, the helicopter collided with a tree and landed heavily on the river bank.

While vacating the helicopter, the pilot became aware of a "rumbling" noise and smoke coming from under the cabin. He attempted unsuccessfully to locate the source of the noise by isolating the electrical systems. He then switched off the battery.

Output from the helicopter engine is coupled through a V-belt drive system to the main transmission which drives the main rotor, and to the tail rotor drive system. The belt drive clutch control installation includes a linear actuator and electrical connections to a clutch control switch and warning light on the instrument panel. A cable and pulley interconnect the linear actuator to the clutch spring on the belt drive transmission. The clutch control switch, which is positioned on the lower left side of the instrument panel, has three positions, RELEASE, HOLD and ENGAGE (the normal operating position). With the switch in the ENGAGE position, the linear actuator retracts, applying tension through an idler pulley to the V-belts. The clutch warning light is on unless the clutch is fully engaged.

Examination of the helicopter rotor drive system did not identify any pre-existing defect which may have contributed to the accident.

The "rumbling" noise heard by the pilot was caused by the starter motor operating due to impact damage to the solenoid. There was no fire.

The linear actuator shaft was found to be extended by approximately 30 to 50% of its travel. It is normally fully retracted when the drive belts are correctly tensioned. The actuator, the clutch control switch, the clutch warning light and the associated wiring were tested and found to be serviceable. It was not possible to determine if the warning light was powered at the time of impact. The position of the linear actuator shaft may have changed following the accident when the pilot repositioned various switches and circuit breakers in an attempt to identify the "rumbling" noise.

The clutch control switch was fitted with a guard to prevent inadvertent operation. However, the retaining springs had weakened such that the guard was ineffective.

The circumstances of the accident are consistent with loss of rotor drive due to insufficient drive belt tension. However, the circumstances in which this occurred could not be determined.