Aviation Safety Investigation Report 198803490

Robinson R22 HP

19 October 1988

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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: 198803490 **Occurrence Type:** Accident
Location: 12 km NE Mt Surprise, QLD
Date: 19 October 1988 **Time:** 715
Highest Injury Level: Nil
Injuries:

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

Aircraft Details: Robinson R22 HP
Registration: VH-HBT
Serial Number: 57
Operation Type: Aerial Work
Damage Level: Substantial
Departure Point: Mt Surprise QLD
Departure Time: 0645
Destination: Mt Surprise QLD

Approved for Release: March 17th 1989

Circumstances:

The pilot reported that he was hovering the helicopter at about 200 feet above ground level. The wind was blowing from 90 degrees left of the helicopter's heading at about 15 knots, with some higher gusts. As he moved the cyclic pitch control to accelerate the helicopter forward, a greater than normal sink rate developed. The pilot increased power to compensate but there appeared to be no response and he heard the low rotor rpm warning horn sound. The pilot then fully lowered the collective pitch control and applied full throttle. He expected the engine rpm to recover quickly but the horn continued to sound. He saw the engine/rotor rpm gauge indicating 85-90 percent. At this stage, he was forced to manoeuvre the helicopter, using all available power, around terrain and trees. A short time later, he again fully lowered the collective pitch control in an effort to regain engine /rotor RPM, however, the horn continued to sound. Because of approaching trees, which he knew the aircraft could not clear, the pilot was forced to land in a less than ideal area. The main rotor blades struck a small tree, and the helicopter touched down firmly on the left skid, causing damage to the engine frame. No fault was found with the helicopter which might have contributed to the accident. It is possible, however, for there to have been some transient fault, the evidence of which was lost lost during recovery of the helicopter by vehicle over very rough terrain. The other possible cause for the loss of rpm is that the main rotor blades were overpitched when the pilot first reacted to the excessive sink. There were a number of other aspects of the helicopter's operation which were likely to have affected the outcome of the occurrence. The helicopter was operating at high all-up-weight, near the boundary of the flight envelope for hover out of ground effect. This meant that there was little excess power available to counter the loss of lift when the helicopter was accelerated forward. By not operating the helicopter into wind, the pilot was increasing the time and power required to achieve translational lift. The manoeuvre the pilot was forced to make to avoid terrain and trees (using all available power) would have negated any rpm recovery that had been achieved from the initial lowering of the collective pitch control. In summary, while there is doubt whether there was an initial power loss, a

number of factors were present which would have rendered an effective recovery difficult, if not impossible, from the ensuing situation.

Significant Factors:

The following factors were considered relevant to the development of the accident

1. Either because of an unexplained power loss, or because the main rotor blades were overpitched, the engine/rotor rpm decayed.

2. The helicopter was operating at high all-up-weight near the edge of the flight envelope.

3. The helicopter was not operated into wind.

4. The pilot was not able to recover the engine/rotor rpm in the height available.

5. The pilot was forced to land on unsuitable terrain.