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AIRCRAFT ACCIDENT

REPORT

No. 90-010T

AEROSPATIALE AS 350B ZK-HDQ

Coronet Peak, Queenstown

9 December 1990

Transport Accident Investigation Commission
Wellington - New Zealand

AIRCRAFT ACCIDENT REPORT NO. 90-010T

Aerospatiale AS350B, 1932,
ZK-HDQ

1 Turbomeca Ariel 1B

1986

9 December 1990, 0950 hours
NZDT

Coronet Peak, Queenstown

Air Transport (Joy Ride)

Crew: 1 Passengers: 6

Crew: Nil Passengers: 4 Minor
2 Nil

Commercial Pilot Licence— Helicopter

32

229 Hours (71 on type)

Transport Accident
Investigation Commission
Field Investigation

Mr J.J. Goddard

1. FACTUAL INFORMATION

1.1 The pilot ferried the helicopter to the helipad situated on the south-east face of Coronet Peak at 2500 feet amsl to pick up six passengers for a river rafting trip. Another helicopter was on the north side of the pad, also loading rafters, so ZK-HDQ was landed on the south side, heading south-west towards the hill.

1.2 The passengers, wearing wetsuits and rafting helmets, were briefed and loaded by the rafting company loader. They were all wearing lap belts.

1.3 The other helicopter lifted off first, towards the north and was followed after 30 seconds by ZK-HDQ.

1.4 The pilot of ZK-HDQ wished to climb away to the east, then north, so as he lifted off he allowed the main rotor torque to turn the helicopter left while starting to move forward.

1.5 As the helicopter approached the edge of the pad he found that he was unable to stop the rotation to the left with full right pedal.

1.6 The helicopter continued to spin to the left, out of control, while moving away from the pad and descending toward the hill face below. The pilot tried to achieve forward speed by use of the cyclic control but without success. He thought that he had not increased collective further at this stage, but did not lower it because of the proximity of the ground.

1.7 After about four rotations, the helicopter collided with the hillside, rolled over rearwards and came to rest inverted. The occupants were assisted from the wreckage by the loader and the pilot before a small fire started in the engine compartment. This fire was promptly put out with a hand extinguisher.

1.8 Examination of the wreckage disclosed no pre-impact failure of any tail rotor, transmission or control systems. Subsequent investigation by DSIR Industrial Development confirmed that the tail rotor reflex control cable had broken from overload, probably when the tail boom separated during the impact sequence. Its ultimate tensile strength was confirmed as being adequate for any control load which could have been applied. The hydraulic control servo was functionally checked and found normal.

1.9 The pilot had noted an engine torque of 75% (Maximum permitted 83%) at lift-off, which would have required a large right pedal input at 2500 feet to maintain heading. The torque-induced yaw permitted by the pilot probably developed too much angular momentum to be stopped with full right pedal and the continued rotation then caused the tail rotor blades to enter an increasingly inefficient operating regime, so that recovery was not possible without reducing torque. Alternatively, the application of full right pedal may have absorbed more power than was available, causing rotor RPM to drop and thus further increasing torque and reducing tail rotor effectiveness. The wind at the pad was reported to have been generally light and variable. Some puffs of breeze had been noted, but mainly up the hill from the east. The general wind flow was from the west, which placed the pad in the lee of high ground. Queenstown Airport, 9 km south, recorded the wind as 210° True, 14

knots gusting 24 knots. A tailwind gust during the critical first manoeuvre could have contributed to the loss of pedal control.

1.10 The delay of 30 seconds after the departure of the first helicopter was probably sufficient to allow its rotor wash to disperse.

1.11 The aircraft's mass was calculated as 53 kg below the maximum permitted, with the CG on the forward limit. It was noted that the CG would have moved outside the forward limit with fuel burn-off on a more prolonged flight than that intended.

16 July 1991

M F DUNPHY
Chief Commissioner

