

Schweizer 330, N433CK

AAIB Bulletin No: 12/99 **Ref:** EW/G99/09/22 **Category:** 2.3

Aircraft Type and Registration: Schweizer 330, N433CK

No & Type of Engines: 1 Allison C20W turbine engine

Year of Manufacture: 1998

Date & Time (UTC): 29 September 1999 at 1532 hrs

Location: Redhill Aerodrome, Surrey

Type of Flight: Private (Demonstration)

Persons on Board: Crew - 1 - Passengers - 2

Injuries: Crew - None - Passengers - 1 Minor

Nature of Damage: Extensive

Commander's Licence: Airline Transport Pilot's Licence (Helicopters)

Commander's Age: 54 years

Commander's Flying Experience: 8,500 hours (of which 41 were on type)
Last 90 days - 85 hours
Last 28 days - 31 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

In a full and forthright report, the commander described the circumstances of the accident. He indicated that the accident occurred after a demonstration of the helicopter characteristics with the right seat passenger (a Longranger helicopter owner) carrying out most of the flying. The commander then took control in order to demonstrate an engine-off landing. The helicopter was positioned onto a left hand downwind leg at a height of 800 feet. Turning onto finals, the commander lowered the collective lever, entering into autorotation with an airspeed of approximately 50 kt. At about 300 feet agl, the airspeed indication suddenly decreased. The commander eased the cyclic control forward in an attempt to increase the airspeed. However, only the rate of descent increased.

The commander had expected the gusting wind to assist with regaining the airspeed, as it had during earlier demonstrations but the airspeed instead dropped to about 10 kt. The RRPM was also very low. As the helicopter was heading west at this time, the commander had difficulty in reading the RRPM gauge because of the low bright sun on the horizon. The commander considered that a very heavy landing was unavoidable. The aircraft struck the ground with a slight nose down attitude and rolled over, coming to rest on its right side.

The commander told the right seat passenger to kick-out the front canopy Perspex and all three occupants exited through the canopy. The only injury sustained was a cut to the right seat passenger's finger, received from a piece of broken Perspex on leaving the aircraft.

During the left-hand descending turn, the RRPM had increased, as expected. Normally, flying turbine helicopters, the commander had become used to the low RRPM warning horn giving some indication as to when to lower the collective. Unfortunately, in this case, it did not sound, because, on this type, closing the throttle to the idle position cuts out the low RRPM warning system. The commander was therefore unaware of the low RRPM status and could not read the RRPM gauge because of the low bright sun on the horizon.

It would appear, therefore, that on roll out from the turn with some collective applied (low RRPM) and low airspeed in conjunction with a larger wind shear factor - a heavy landing was inevitable.

Air Traffic Control records indicated that at 1520 hrs, the surface wind was from 240° at 15 kt, with gusts to 30 kt. At the time of the accident, the surface wind was recorded as being from 230° at 19 kt.