Aviation Safety Investigation Report 199703682

Schweizer Aircraft Corp 269C-1

07 November 1997

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Occurrence Number: 199703682 **Occurrence Type:** Accident
Location: Upper Beaconsfield
State: VIC **Inv Category:** 4
Date: Friday 07 November 1997
Time: 1124 hours **Time Zone** ESuT
Highest Injury Level: Serious
Injuries:

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

Aircraft Manufacturer: Schweizer Aircraft Corp
Aircraft Model: 269C-1
Aircraft Registration: VH-OCC **Serial Number:** 0034
Type of Operation: Instructional Dual
Damage to Aircraft: Substantial
Departure Point: Upper Beaconsfield Vic.
Departure Time: 1124 ESuT
Destination: Moorabbin Vic.

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Commercial	5000.0	15000

Approved for Release: Wednesday, August 12, 1998

[redacted]

The flying instructor stated that he was conducting a trial instructional flight in conjunction with visiting his property with the student. A few minutes after landing, he performed a vertical takeoff into an estimated 10 kt northerly wind. Engine RPM was close to the desired 2,700. The helicopter climbed vertically using 28 inches of manifold air pressure, leaving about 1.5 inches in reserve. It cleared the tops of the trees at about 40 ft AGL. The instructor then lowered the nose slightly to gain airspeed. As airspeed increased to about 10 kts the helicopter climbed to about 45 ft AGL. The instructor then allowed the helicopter to accelerate without increasing power when suddenly, after about 30 metres, the engine RPM commenced to decay. He immediately applied full throttle and lowered the collective slightly but RPM continued to decay and the helicopter lost height. He immediately turned the helicopter 90 degrees left towards a downhill path through the trees and lowered the nose hoping to gain more airspeed and rotor RPM. Engine RPM had decreased to approximately 2,450 and continued to decay. The instructor then tried to reach the junction of his driveway and a road but the engine stopped completely and the helicopter crashed into a tree right side first. The main rotor blades severed the tree trunk several times and struck a smaller tree before the helicopter impacted the ground on its left side.

At the time of the accident the helicopter's gross weight was about 22 kg below maximum. The accident site was about 496 ft above sea level. The outside air temperature was 17 degrees Celsius and the weather was fine. The instructor reported that the carburettor air temperature gauge read 15 degrees Celsius during the pre-takeoff checks. As this reading was out of the yellow band on the gauge, he did not apply carburettor heat for the takeoff. The estimated relative humidity at the accident site was 50 to 55%.

Subsequent concerns were expressed by the company operating the helicopter that carburettor icing may have caused the engine failure. The operator reported experiencing symptoms of carburettor icing and the engine stopping in this helicopter during past practice autorotations with the engine idling. Prior to the accident, the operator had prompted company pilots to be very vigilant of carburettor icing and diligent in the use of carburettor heat, particularly during practice forced landings.

The operator was also concerned at the higher than expected fuel usage in their 269C-1, which had the standard non-fuel-injected engine, compared to their 269C helicopters with the standard fuel-injected engine. (The Schweizer 269C-1 is also commonly known as the 300CB, whereas the 269C is commonly known as the 300C.) The operator reported that their 269C-1 used about 48 litres per hour, whereas their 269C helicopters averaged about 41 litres per hour. The operator wondered if the additional fuel used by the C-1 model may have made it more prone to carburettor icing.

The damaged helicopter was retrieved to a hangar and subsequently inspected. An engineer/investigator from Schweizer Aircraft Corporation assisted in the investigation. No fault was found with the airframe or the engine which may have contributed to the accident. No evidence was found to prove that carburettor icing had occurred. Carburettor icing is not normally encountered at or near full engine power unless high humidity or visible moisture is present. The reason the engine failed could not be determined.

The Precision Airmotive Corporation, HA-6 10-6030 carburettor was originally fitted to Schweizer 269C-1 helicopters. On 5 March 1998, the manufacturer issued Service Information Letter - Fuel Systems, SIL MS-3, Revision 1, for the mandatory conversion of carburettors in all Schweizer 269C-1 helicopters to the HA-6 10-6030-1. Helicopters with airframe serial numbers 0001 to 0073 were to be retrofitted, whereas all subsequent factory models will be equipped with the modified carburettor before sale. The conversion involved installing a new secondary nozzle, a new power jet, a new idle tube, adjusting the air metering valve and adding an acceleration pump circuit. As well as the reconfigured carburettor, the retrofit included an air straightener, removal of one engine baffle, relocation of the cylinder head temperature probe and relocation of the optional exhaust gas temperature probe, if so equipped. The intention of the reconfigured carburettor, combined with the air straightener was to establish improved fuel distribution and better fuel economy.