

AVIATION INVESTIGATION REPORT

A03P0133

CONTROLLED FLIGHT INTO TERRAIN

FRASER VALLEY SKYDIVING CENTRE LTD.

CESSNA 182 C-GHKH

CHILLIWACK AIRPORT, BRITISH COLUMBIA 7.5 nm E

31 MAY 2003

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

## Aviation Investigation Report

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### *Summary*

The Cessna 182, C-GHKKH, serial number 33353, owned by the Fraser Valley Skydiving Centre Ltd, took off from a private airstrip near Chilliwack, British Columbia, with the pilot and four skydivers on board at approximately 1840 Pacific daylight time. Two skydivers were released at 3000 feet and two at 9000 feet. The aircraft failed to return to the strip. No emergency locator transmitter signal was received. The Rescue Coordination Centre at Victoria, was notified and a search was initiated. The aircraft was found six days later on a northwest-facing slope of the Skagit mountain range, four nautical miles from the Fraser Valley Skydiving Centre airstrip, at an altitude of about 4600 feet above sea level. A fire had broken out on impact and consumed much of the cockpit area and left wing. The aircraft was destroyed. The pilot was fatally injured.

*Ce rapport est également disponible en français.*

## *Other Factual Information*

The pilot held a commercial pilot licence issued by Transport Canada (TC) and endorsed for single-engine land aeroplanes. The medical certificate has a restriction that glasses or contact lenses must be worn while flying and indicates that the last medical was conducted on 05 March 2003 and was valid for twelve months. The pilot had accumulated approximately 300 flying hours on light, single-engine aircraft. During the commercial training course, the pilot completed 30 hours of approved instrument ground trainer time and 16.5 hours of simulated instrument training time. He began unpaid work for the Fraser Valley Skydiving Centre in November 2002 and had accumulated about 40 hours on the Cessna 182.

An autopsy of the pilot, including a full toxicology examination, did not reveal any condition that could have led or contributed to the accident.

Records indicate that the aircraft was certified, equipped, and maintained in accordance with existing regulations and approved procedures. The aircraft was manufactured in 1956 and had flown a total of 3269.1 hours before the accident flight. A review of the airframe, engine, and propeller logbooks showed nothing remarkable. The engine, a Continental O-470-L, serial number 66321-6-L, had accumulated 652.8 hours since overhaul and 4059.7 hours since new.

The reported weather at Abbotsford, 28 nautical miles south-southwest of the accident site, at 1900 Pacific daylight time (PDT)<sup>1</sup>, approximately the time of the accident, was as follows: wind 230°T at 5 knots; visibility 25 statute miles (sm); a few clouds at 4500 feet, scattered clouds at 6000 feet, broken clouds at 9000 feet, broken clouds at 21 000 feet; temperature 18°C; dew point 8°C; altimeter setting 30.11; remarks: 2 oktas stratocumulus, 2 oktas stratocumulus, 2 oktas altocumulus, 1 okta cirrus, sea level pressure 1019.7 hectopascals.

The automated weather observation system (AWOS) reported weather at Hope, 21 nautical miles (nm) northwest of the accident site at 1900, was as follows: wind 290°T at 5 knots; visibility 9 sm; broken clouds at 5100 feet; temperature 16°C; dew point 10°C; altimeter setting 30.09; remarks: sea level pressure 1019.1 hectopascals.

The graphical area forecast for the Fraser Valley area for 1700, about two hours before the accident, called for the following conditions: patchy broken altocumulus clouds based at 12 000 feet above sea level (asl) topped at 15 000 feet asl; scattered towering cumulus clouds based at 7000 feet asl, topped at 20 000 feet asl; prevailing visibility more than 6 sm in light rain showers; and local ceilings 1500 feet above ground level (agl). The graphical area forecast for 2300, about four hours after the accident, called for improving weather conditions in the Fraser Valley area, with clouds generally broken over the coastal mountains.

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<sup>1</sup> All times are Pacific daylight time (Coordinated Universal Time minus seven hours) unless otherwise noted.

All four skydivers, who jumped from the aircraft before the accident, observed the presence of low level cloud along the mountains to the southwest of the parachuting area. It was also reported that there were clouds on the tops of the high terrain southeast of the airstrip and haze in the area of the accident site near the time of the occurrence.

The wreckage was discovered six days after the accident by a recreational paraglider pilot who was not part of the search and rescue operation. The aircraft had hit tree tops before impacting the 45-degree slope. Tree damage and contact markings indicated that the aircraft struck the tree tops in basically a wings-level attitude, in a slight descent, and at a relatively high speed. Fire consumed most of the left wing and cockpit area, but no soot streaks were seen and only paint bubbling was observed.

The fuselage came to rest on a heading of 120 degrees magnetic in an inverted attitude. The right wing had separated from the fuselage and was 30 feet down the slope. All control surfaces were accounted for. The right wing aileron and flap cables had failed in overload at the wing root. Flight control cable continuity was established for the right wing and rudder but could not be traced up to the cockpit due to the extensive fire damage. Flight control cable continuity for the left wing and elevator could not be established. Nothing was found which would indicate any faults with the flight controls before impact.

The engine and propeller were excavated and examined on site. Neither exhibited indications of pre-impact damage. The vacuum pump was found and examined; internal scratches were observed. Partial rotation of the propeller demonstrated aft accessory section continuity through the crankshaft at the alternator drive pulley. The propeller remained attached to the crankshaft flange. Both propeller blades exhibited torsional twisting, S-bending, chord-wise scoring, and leading and trailing edge damage.

The airspeed indicator (ASI), vertical speed indicator (VSI) and ELT were removed and shipped to the TSB Engineering Branch Laboratory for analysis. Microscopic examination of the ASI face revealed a paint smear, correlating with the tip of the pointer, indicating an airspeed between 165 and 168 miles per hour (mph) indicated airspeed (IAS). A pointer smear mark on the VSI face correlated with sector gear tooth damage, indicating a descent rate of 840-880 feet per minute.

The armed emergency locator transmitter (ELT) sustained impact damage and did not operate. Damage to both the antenna connection and the acceleration switch precluded any possibility of ELT transmissions.

Radar data for the area and time of the occurrence was examined. The aircraft did not have a transponder nor was it required to have one. A primary target, believed to be the subject aircraft, was observed at the appropriate time and place manoeuvring in left hand orbits, but due to the lack of a transponder, no positive identification could be made, and only ground speed and heading data were available. The first and last portions of the flight could not be observed because the aircraft was then too low to be detected by radar. The last radar observation showed the aircraft to be on a heading of 010°T, altitude unknown, about seven nm northwest of the crash site.

The following Engineering Branch report was completed:

LP 053/2003 - Instruments Analysis

## *Analysis*

Tree damage and contact markings indicated the aircraft was in wings-level, slightly descending flight at impact. Propellor blade damage and vacuum pump internal scratches indicated the engine was producing considerable power on impact. This is consistent with a normal descent of an aircraft which has just dropped skydivers. Engine power must be kept relatively high during descent to avoid shock cooling and subsequent damage to the engine. Nothing was found to indicate any pre-impact condition which could have affected the aircraft's airworthiness.

While the weather at the time of the accident was suitable for VFR flight, available weather data indicate considerable cloud was present in the area.

Radar data, believed to be related to this flight, shows that the pilot's descent took him over that area of high terrain. It is likely that he entered cloud inadvertently. Since he did not have an instrument rating and only limited instrument flight training during his commercial licence course, he would probably have been aware of the possibility of losing control of the aircraft in cloud. Laboratory findings of airspeed and descent rate on impact are consistent with his efforts to keep the wings level, while continuing to descend in the expectation of descending out of cloud. His entry into cloud likely occurred while on a southeasterly heading, and wings-level flight on that heading took him into rising terrain.

## *Findings as to Causes and Contributing Factors*

1. The pilot most likely entered cloud inadvertently and continued to descend in the expectation of breaking out of cloud, but flew into high terrain.

## *Findings as to Risk*

1. The armed ELT did not operate because of impact damage, hampering the search and rescue operation.

*This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 25 March 2004.*

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