

AVIATION OCCURRENCE REPORT

COLLISION WITH TERRAIN

**CESSNA 150, C-FLYU
POWELL RIVER, BRITISH COLUMBIA
21 JULY 1996**

REPORT NUMBER A96P0132

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.

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Summary

The Cessna 150, with the pilot and one passenger on board, departed from the Powell River Airport, British Columbia, at about 2030 Pacific daylight savings time for a local sightseeing trip. It was the pilot's intention to fly overhead a house where friends had gathered for a social occasion. The house was located within a housing subdivision, one-half mile southwest of the airport. The pilot approached the house at a low height above the ground, rocked the wings, and entered a steep, left turn. The turn was completed and, as the wings levelled, witnesses heard the engine stop and saw the nose of the aircraft pitch down slightly. There was then a momentary recovery to level flight from the nose-down attitude, followed by an abrupt aerodynamic stall. The aircraft then descended in a steep nose-down attitude, striking the side of a house and the ground. Both occupants were fatally injured. The aircraft was substantially damaged. There was no fire.

Ce rapport est également disponible en français.

Other Factual Information

The pilot was licensed and qualified for the flight in accordance with existing regulations, and there was no evidence that physiological factors affected his performance.

The weather conditions reported at the time of the accident were 4,000 feet scattered, visibility 25 miles, temperature 22 degrees Celsius, and calm winds.

A review of the available aircraft records indicated that the aircraft was certificated, equipped, and maintained in accordance with existing regulations and approved procedures. The weight and centre of gravity of the aircraft were estimated to have been within the prescribed limits.

An examination of the wreckage revealed no evidence of any pre-existing mechanical deficiencies which could have contributed to the accident. The wings contained a quantity of fuel and had been separated from the fuselage by the rescue crews to reduce the risk of fire. Because the fuel lines had been disrupted and the carburettor crushed at impact, the pre-impact serviceability of the fuel delivery system could not be determined.

Witnesses heard the engine sound stop abruptly immediately prior to the aerodynamic stall. One witness, an experienced pilot, observed the propeller windmilling just prior to the stall; another witness observed that, after the stall and the instant before impact, the propeller appeared to have stopped. Witness estimates of the height of the aircraft while it was manoeuvring above the houses vary from 80 to 200 feet.

The aircraft engine was taken to the TSB Regional wreckage examination facility for examination. No evidence of pre-impact failure was found, nor was anything found which could explain the power loss.

The exhaust pipe was bent and crushed during the impact. The engine rpm tachometer and a portion of the exhaust pipe were sent to the TSB Engineering Branch Laboratory for examination. It was concluded that the exhaust pipe was below operational temperatures when the crushing and bending occurred. The examination of the tachometer found that the engine rpm at impact may have been between 300 and 1,000. This rpm range is not necessarily indicative of an operating engine, because a propeller can "windmill" in descending flight, being driven by the airflow without engine power driving it. The damage to the propeller was consistent with the damage patterns characteristic of a propeller that was not powered at impact.

To provide pilots with a reasonable altitude buffer to manoeuvre in the event of an emergency, Air Regulation 534(2)(a) requires, in part, that no person shall fly an aircraft over a built-up area of any city or town at an altitude less than "...1,000 feet above the highest obstacle within a radius of 2,000 feet from the aircraft."

Analysis

The reports of the windmilling and then stopped propeller, the damage to the propeller, and the sudden loss of engine sound, combined with the evidence provided by the exhaust pipe damage and engine tachometer markings, are all consistent with a loss of engine power before impact. However, the reason for the power loss could not be determined.

The loss of engine power causes neither an aircraft to stall, nor a pilot to lose control of the aircraft. The accident aircraft, however, was operated at a low height above ground when the power loss occurred, and it likely stalled when the pilot tried to prevent the aircraft from descending any lower. Without sufficient height above the houses, the pilot could not recover from the stall.

Had the aircraft been higher above the ground when the engine lost power, the pilot would have had greater opportunity to recover from the stall, and to attempt an engine restart or to carry out a forced landing in a more suitable area.

The following TSB Engineering Branch reports were completed:

- LP 106/96 - Tachometer Examination; and
- LP 107/96 - Exhaust Stack Temperature.

Findings

1. The pilot was licensed and qualified for the flight in accordance with existing regulations.
2. The aircraft was certificated, equipped, and maintained in accordance with existing regulations and approved procedures.
3. The weight and centre of gravity were estimated to have been within the prescribed limits.
4. There was no evidence of any pre-existing mechanical defects which could have contributed to the accident.
5. The aircraft was operated at a low height above ground when the engine lost power for undetermined reasons.
6. The aircraft stalled, likely as a result of the pilot attempting to maintain height.

Causes and Contributing Factors

The pilot was flying the aircraft at less than 1,000 feet over a built-up area. The operation of the aircraft at low altitude did not permit him to recover from the stall following the loss of engine power.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 22 January 1997.