

AVIATION INVESTIGATION REPORT

A00P0115

LOSS OF CONTROL

BELLANCA 65-CA AERONCA C-FAUX

FORT STEELE, BRITISH COLUMBIA

01 JULY 2000

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 Aeronca 65-CA, serial number CA 14691, operated by the owner, was taking off from the owner's private aerodrome near Fort Steele, British Columbia, at about 2000 mountain daylight time for a local flight. The pilot was accompanied by his teenage nephew. The aeroplane was observed to remain close to the ground after it lifted off from the grass strip. As it approached a stand of trees at the end of the strip, it turned, probably to avoid the trees. The bank angle appeared steep, and the aircraft pitched nose down, descended rapidly, and struck a house. The pilot and the passenger were seriously injured. The residents of the house were in the backyard and escaped injury. The aircraft was substantially damaged.

*Ce rapport est également disponible en français.*

## *Other Factual Information*

Weather at the time of the accident was visual meteorological conditions. Clouds were reported to be few at 7000 feet above ground level, and visibility was 25 statute miles. The winds at the Cranbrook Airport, British Columbia, about eight miles away, were generally from the south at about 10 to 15 knots, and the temperature was 24 degrees Celsius. The wind at the accident site was reported to have been calm around the time of the accident; however, it had been blowing from the south earlier in the day.

The pilot operated his aircraft from a 1600-foot grass airstrip. The runway is oriented 14/32 and is at 3100 feet above sea level. Based on the temperature and the atmospheric pressure, the density altitude for the occurrence take-off would have been about 5100 feet. The pilot used the Aeronca frequently for local flying, normally by himself. He also owned a share in a Cessna 172, which was kept at, and operated from, the Cranbrook Airport. He would normally use the Cessna 172 when taking a passenger or going on a long trip.

Earlier on the day of the accident, the pilot had flown the Aeronca from his private grass airstrip for a local flight and, a few hours later, had returned to the strip. That trip was unremarkable but differed from the accident flight in that the aeroplane was not loaded with an extra person. Performance charts are not available for this aeroplane because there is no manual of operating instructions for aircraft of this type built before 1946; the occurrence aircraft was built in 1941. Pilots who fly similar aeroplanes remarked that take-off and climb performance is limited. At gross take-off weight, with a density altitude similar to that during the accident flight, the Aeronca would require several thousand feet to clear a 50-foot obstacle during take-off. The engine was rated at 65 horsepower at sea level, but at a density altitude of 5100 feet, the engine horsepower was calculated to decrease about 23 per cent to about 50 horsepower.

The occurrence take-off was to the north. The aeroplane appeared not to be climbing very well. It reached about 50 feet, and as it approached a stand of trees at the north end of the field, it appeared as though the pilot was manoeuvring the aeroplane around the high trees. During the manoeuvre, the aeroplane's bank angle seemed to steepen, and the nose dropped. The aeroplane then descended steeply and struck the roof of a house. The nose, engine, and front cockpit of the aeroplane penetrated the house. The fuel tank ruptured, and fuel spilled into the house but did not ignite.

The pilot had not complained about the aeroplane's airworthiness, and the person who had been conducting maintenance on the aeroplane was not aware of any airworthiness issues with the accident aeroplane. During the take-off for the accident flight, the aeroplane engine noise was unremarkable. The gross take-off weight was calculated to be 1228 pounds, which is 22 pounds below the maximum gross take-off weight.

The pilot was issued a recreational pilot permit in August 1997. His training was limited to that required for his basic flying permit and a check-out on the Aeronca. His flying experience totalled about 190 hours, most of which were on the accident aircraft. He had completed a Category 4 medical declaration on 19 October 1998 and had no history of health problems.

The aeroplane had about 1860 hours of flying time since manufacture. Its maintenance was well documented. An annual inspection had been completed on 03 July 1998.

## *Analysis*

The aeroplane appeared to be under control. The engine was likely operating normally; however, its horsepower would have decreased about 23 per cent in the conditions present during the accident flight. The negative effects of the relatively high density altitude would be felt in all facets of the aeroplane's performance. The aeroplane was not loaded as heavily during the flight earlier in the day, and the pilot may not have been aware of the extent to which the high density altitude and wind conditions affected the flight. Also, even the slightest tail wind from the south would considerably increase the distance required to clear the trees at the end of the field. Because of the extra weight on the accident flight, these conditions contributed to the aircraft not attaining an angle of climb sufficient to clear the trees to the north of the airstrip.

The pilot, in attempting to climb over the trees, was likely operating the aeroplane at an angle of attack close to an aerodynamic stall. Because the aeroplane did not reach a height sufficient to fly over the trees, the pilot probably banked the aeroplane to avoid the trees. This manoeuvring would have affected the airflow over the wings, causing the aeroplane to stall at a height from which a recovery was not possible.

## *Findings*

1. The aircraft was close to its maximum gross take-off weight and had degraded performance because of the relatively high density altitude. As a result, the angle of climb was too shallow to clear the trees at the end the airstrip.
2. The pilot's attempt to manoeuvre to avoid the trees resulted in a stall at an altitude that was too low for the pilot to recover.

*This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 29 March 2001.*