

AVIATION OCCURRENCE REPORT

LOSS OF CONTROL - STALL

**PIPER PA-28-151 WARRIOR C-GHWH
NELSON, BRITISH COLUMBIA 30 NM EAST
07 JULY 1996**

REPORT NUMBER A96P0112

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 Piper aircraft, C-GHWH, departed the Nelson airport, British Columbia, at about 1225 Pacific daylight saving time (PDT) in support of a Canadian Forces search and rescue (SAR) mission. The aircraft was part of the Civil Air Search and Rescue Association (CASARA) assignment. The crew, consisting of a pilot, a navigator, and an observer, were tasked to search an area east of Nelson and west of Cranbrook for a recently missing Piper PA-28 aircraft. At 1300, the accident pilot broadcast on the radio that all search operations were normal. At about 1340, an observer on board a Canadian Forces SAR aircraft spotted smoke coming from a downed aircraft, later identified as C-GHWH; it had been destroyed by the crash and post-impact fire, and the three occupants were fatally injured. There were no witnesses to the accident. The object of the SAR mission, missing PA-28 aircraft C-GNXV, was found later the same day; it had crashed in mountainous terrain north of Nelson. (Refer to TSB file number A96P0111.)

Ce rapport est également disponible en français.

¹ All times are PDT (Coordinated Universal Time minus seven hours) unless otherwise noted.

Other Factual Information

The weather in the vicinity of the accident site was reported to be clear, about 10 degrees Celsius, with the winds from the northwest at 20 knots. The only reported turbulence in the accident area was near mountain peaks. There are few surface features in the mountains to provide pilots with reliable clues as to local wind speed and direction. Several search pilots reported smooth flight conditions in the mountain valleys and cirques, although one stated that he encountered a smooth updraft of approximately 1,000 feet per minute.

The wreckage was located at the 5,800-foot level on a 35-degree slope of Snowcrest Mountain. The aircraft had struck the ground at low speed, in a flat attitude relative to the surface. The burned-out aircraft was surrounded by small trees, and the fire had spread about 150 feet up the hill. An examination of the wreckage did not reveal any conclusive evidence of the direction of flight before impact; however, the orientation of the fuselage at rest facing towards the end of the valley suggests that the aircraft had been flying in that direction. Ground scars revealed forward movement of less than 3 feet after impact, and there was no damage to any of the surrounding trees.

The aircraft fuselage was largely consumed by a fuel-fed, post-crash fire. Both wings were essentially intact and in position, as was the empennage. Severe fire damage precluded the recovery of any cockpit instruments or switches that could have yielded any useful information. The flaps were found set at the first notch (10 degrees). All primary flight control cables and control surfaces were found intact. There was no evidence found of any airframe failure or system malfunction prior to impact, and the pilot had given no indication of any problems when he radioed in at 1300 PDT.

The engine was taken to the TSB regional wreckage examination facility for examination; no evidence of pre-impact failure was found. The propeller damage was consistent with the characteristic damage patterns of a propeller being powered at impact.

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 aircraft weight at take-off was estimated to have been at or near the maximum gross weight, and the centre of gravity of the aircraft was estimated to have been within the prescribed limits at the time of departure.

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 pilot had previous experience on CASARA missions, and was trained and qualified in accordance with the CASARA standards.

The type of search pattern used during this particular aerial search is known as "contour searching." The recommended procedure is to maintain a constant altitude above the contours of the mountainous

terrain, starting at the peak and working down the mountain. The CASARA training manual advises that contour searching in mountainous terrain is considered to be one of the most dangerous and difficult types of visual searches. The CASARA pilots in British Columbia receive both classroom and airborne training in the various search profiles, and the accident pilot had taken this type of training.

The pilot's assigned search area was to have been flown at a height of 1,000 feet above the contours; this height would have afforded the searchers an effective visual searching range of one mile. The pilot had been assigned a 500-foot altitude restriction in his morning search area. At the time that the accident aircraft was to have been transiting to the search area, another search pilot saw it heading in the opposite direction. When questioned, the accident pilot replied that he did not have enough altitude to enter the mountainous search area, and that he was trying to gain altitude before entering the search area.

The aircraft manufacturer's performance charts for the PA-28-151 indicated that the maximum climb performance at the density altitude of 6,400 feet computed for the occurrence site was approximately 370 feet per minute, at the best rate-of-climb speed of 87 mph. The turning radius of the aircraft at this higher density altitude would have been greater than that at sea level for the same indicated airspeed.

Analysis

Mechanical malfunction was not considered a likely factor in this accident because no evidence was found of any airframe, engine, or system malfunction or failure prior to impact, and the pilot had given no indication of any problems when he radioed in at 1300.

The aircraft's flight path and altitude prior to the occurrence are not known. The evidence of the aircraft's rather flat attitude relative to the sloped surface of the mountain and the low speed at impact, the short wreckage trail, and the wreckage damage patterns are all consistent with the aircraft stalling and entering an uncontrolled descent to the ground during a turn at a low height from which recovery was not possible. Because there were no witnesses to the accident, it could not be determined why the aircraft stalled and crashed to the ground.

Findings

1. The pilot was certified and qualified for the flight in accordance with existing regulations.
2. There was no evidence of any airframe, engine, or system malfunction or failure prior to impact.
3. There were moderate to strong winds and reported updrafts in the area at the time of the accident.

4. The aircraft was operating at a density altitude which adversely affected the aircraft's rate-of-climb and turn radius.
5. The aircraft crashed in an uncontrolled, stalled flight condition, probably from a low altitude, for reasons undetermined.

Causes and Contributing Factors

The aircraft stalled and crashed to the ground for reasons undetermined.

Safety Action

The British Columbia chapter of CASARA held an executive meeting on 20 July 1996. It was resolved at that meeting that any aircraft involved in close contour searches of mountainous terrain must have engines with a minimum power rating of 200 horsepower.

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 05 March 1997.