

Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

**AVIATION INVESTIGATION REPORT
A07C0082**



LOSS OF CONTROL - COLLISION WITH TERRAIN

**CHIMO AIR SERVICE
CESSNA 180 C-FDNZ
MILLER LAKE, ONTARIO
17 MAY 2007**

Canada

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 float-equipped Cessna 180J (registration C-FDNZ, serial number 3004) was en route from Miller Lake, Ontario, to Roderick Lake, Ontario, returning from a series of camp re-supply and maintenance flights. The aircraft was reported as missing at 2130 central daylight time when it did not arrive at Roderick Lake. Search and rescue personnel discovered the wreckage in a wooded area near the shoreline of Miller Lake. The pilot had sustained fatal injuries. The single passenger was trapped in the wreckage and had sustained serious injuries. The aircraft was substantially damaged.

Ce rapport est également disponible en français.

Other Factual Information

The pilot held a valid Canadian commercial pilot licence, which was endorsed for seaplane operations, and was qualified and fit to act as pilot-in-command of C-FDNZ. The pilot's total flight time was 382 hours, including 138 hours of seaplane flight time, 123 hours of which were on the Cessna 180 aircraft type. He had flown approximately nine hours in the preceding week and had started work at 0700 central daylight time¹ on the day of the accident.

The nearest recorded weather was for the Red Lake Airport, Ontario, and the weather recorded at 1500 was as follows: wind 230° magnetic (M) at 13 knots gusting to 20 knots variable from 180° to 260°, visibility 15 statute miles, few clouds at 21 000 feet, few clouds at 23 000 feet, temperature 19°C, dew point -1°C, altimeter setting 29.94 inches. The wind conditions in the area of Miller Lake were reported as high and extremely gusty, which could have produced low-level windshear.² When aircraft encounter low-altitude windshear at low airspeeds (such as shortly after take-off), the potential for a wing stall increases.

C-FDNZ was a commercially registered aircraft and was required to be maintained in accordance with an approved maintenance control system by the *Canadian Aviation Regulations* (CARs).³ A review of the aircraft's records indicated that it had been maintained on an annual inspection program, which was not approved as part of the operator's maintenance control system.

Although it was commercially registered, C-FDNZ was not used to transport revenue passengers or freight. It was used solely to carry out camp maintenance and supply functions. The camp maintenance flights were dispatched on an as-required basis. The flight itineraries for camp maintenance were non-specific as to the time and duration of each flight and were accomplished by specifying an estimated time of arrival (ETA) for the day's final destination.

On the day of the occurrence, the pilot of C-FDNZ departed Red Lake to complete a series of flights for the purpose of checking the operator's boat caches north of Red Lake. At approximately 1045, he picked up a passenger (a private guest of the operator) at Marvin Lake and departed for the operator's camp on Miller Lake. C-FDNZ was heard landing at Miller Lake at approximately 1115 and the pilot reported airborne off Miller Lake at approximately 1430.

Investigators were unable to determine precisely which area of the lake was used for take-off. However, a take-off area of sufficient length for a southwesterly departure, into wind at the time of the occurrence, extends from the operator's camp to the southwest. The accident site is located approximately two nautical miles northwest of the Miller Lake camp. The aircraft's

¹ All times are central daylight time (Universal Coordinated Time minus five hours).

² Low-level windshear refers to changes in wind speed (10 to 20 knots) over a short distance or period of time.

³ Reference: Standard 625.86 of the CARs.

direction of travel at impact was southwest. The reason for the aircraft's change in direction at that point in the flight was not determined; however, the operator had boats located at a portage in the vicinity of the accident site.

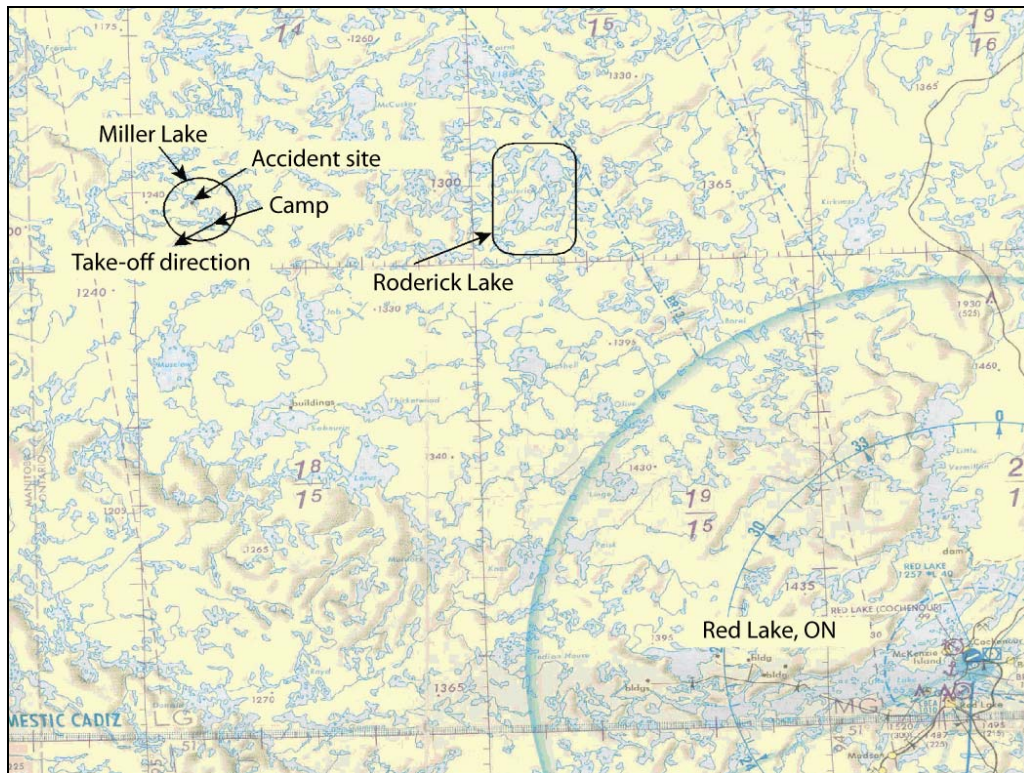


Figure 1. Map of the occurrence area

The aircraft was expected to arrive at the main camp on Roderick Lake by 2000. When it did not arrive, the camp owner reported it as overdue. A search and rescue aircraft was dispatched from Rescue Coordination Centre Trenton. However, several factors delayed discovery of the wreckage and rescue of the surviving passenger. These factors were as follows:

- no emergency locator transmitter (ELT) signal;
- inaccurate coordinates for the Miller Lake camp; and
- poor weather, which required the search personnel to postpone the search.

The surviving passenger was not extracted from the wreckage until the following day, approximately 18 hours after the accident.

Most of the damage to the aircraft was consistent with a near-vertical collision with terrain. The floats, float struts, and fuselage exhibited overload failures due to compression, and the cabin was compressed as a result of impact with a large tree. Damage to the propeller and trees was consistent with high engine power. The flaps were set to the 20° (take-off) position.

The ELT arming switch was found in the OFF position.⁴ Although it could not be determined if a safety briefing was completed for this flight, on previous flights, the passenger had received a full safety briefing including the location and operation of the ELT. The ELT was mounted in the rear cabin area beyond reach of the pilot and passenger, and search and rescue personnel had not moved the ELT arming switch. Inspection of the wreckage did not indicate that the aircraft had experienced any technical malfunctions.

The aircraft's cargo was recovered at the scene. Weight and balance calculations were completed for various possible aircraft load scenarios (including minimum and maximum fuel), and all showed that the aircraft would have been within its certified weight and balance limitations at the time of accident.

Analysis

Damage to the aircraft was consistent with an impact with the ground after a low-level wing stall. The aircraft's exact flight path could not be determined. However, conditions were conducive for low-level windshear at the time of the accident, and the aircraft was configured for take-off or manoeuvring flight. A possible accident scenario is that the aircraft encountered windshear while manoeuvring in the vicinity of the operator's boat cache north of Miller Lake, resulting in a stall at an altitude from which the pilot could not recover.

Because C-FDNZ was maintained on an annual inspection program, its maintenance program did not meet the requirements of the CARs maintenance standards for commercially registered aircraft. However, the absence of any indication of a technical malfunction suggests that the maintenance program was not a contributing factor in the accident.

The accident occurred at approximately 1430. However, the aircraft was not reported as missing until 2130 because it was not expected to arrive at Roderick Lake until 2000. Consequently, the flight watch system used by the camp operator and pilot delayed initiation of the search and rescue mission by seven hours. The late start, deteriorating weather, and the absence of an ELT signal all contributed to a lengthy rescue mission, which extended the time that the passenger was trapped in the wreckage to approximately 18 hours.

The location of the ELT arming switch precluded the trapped passenger from having operated it, indicating that it must have been turned off at some time before the occurrence flight. Its location also prevented the passenger from activating the ELT after the accident.

Finding as to Causes and Contributing Factors

1. The aircraft stalled while manoeuvring at an altitude from which recovery was not possible. The stall was most likely induced by low-level windshear.

⁴ ELTs typically have a three-position switch: OFF – ARM – ON. Normal position for the switch is the ARM position, which allows the unit to transmit automatically upon impact.

Findings as to Risk

1. The company's flight watch system delayed the initiation of the search and rescue response.
2. The emergency locator transmitter (ELT) had been turned off and was out of reach of the trapped passenger. The absence of an ELT signal compounded the difficulty in locating the aircraft and extended the duration of the search.

Safety Action Taken

After the accident, the operator purchased an aircraft satellite tracking system for its aircraft.

The operator implemented a procedure whereby a satellite telephone is carried on all camp maintenance flights and pilots are required to report flight-following information to the operator's dispatch personnel.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 23 October 2007.

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