

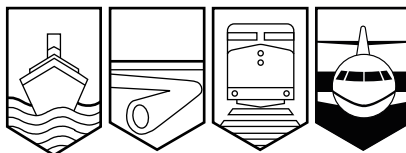
Transportation Safety Board  
of Canada



Bureau de la sécurité des transports  
du Canada

## AVIATION INVESTIGATION REPORT

A03Q0109



### FUEL EXHAUSTION AND FORCED LANDING

INSTITUT AÉRONAUTIQUE DE LA CAPITALE

CESSNA 172M C-GSZC

QUÉBEC, QUEBEC

26 JULY 2003

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 Cessna 172M, registration C-GSZC, serial number 17264826, carrying the pilot and three passengers, was on a visual flight rules (VFR) flight from Sept-Îles, Quebec, to Rivière-du-Loup, Quebec. After a short stopover at Rivière-du-Loup to drop off the passengers, the pilot decided to continue the flight to Québec, Quebec, without refuelling. En route, the pilot encountered adverse weather and requested clearance for special VFR to land at the Québec Airport. About nine nautical miles from the threshold of Runway 24, the engine (Lycoming O-320-E2D) sputtered and then stopped. At approximately 2009 eastern daylight time, the pilot declared an emergency and carried out a forced landing onto the de la Capitale highway. The aircraft struck a street lamp and the nose dropped before it collided with the ground. The pilot was seriously injured and the aircraft was severely damaged.

*Ce rapport est également disponible en français.*

## *Other Factual Information*

The records indicated that the aircraft was equipped and maintained in accordance with existing regulations. The pilot was certified and qualified for the flight, with a total of 180 flying hours.

As part of the instruction for his commercial pilot licence, the pilot had to complete a cross-country flight. He had planned a flight from Québec to Port-Menier, Quebec, with a stopover at Rivière-du-Loup to pick up three passengers, with a return trip the next day. This cross-country flight, which had been planned for a long time, had been postponed three times during the month because of adverse weather. The weather finally cleared the day before the flight and the flying school instructor permitted the cross-country flight. The pilot flew from Québec to Rivière-du-Loup and from Rivière-du-Loup to Sept-Îles. On the way, the weather conditions deteriorated and the pilot had to land in special VFR conditions at the Sept-Îles Airport. A little later in the evening, after refuelling, he had wanted to take off on a special VFR flight to continue his cross-country flight to Port-Menier. The flight service specialist (FSS) strongly discouraged him from making the flight and explained that he was not authorized to take off on a special night VFR flight. The pilot was obliged to stay in Sept-Îles, and spent the night at a hotel with his passengers.

The next day, after inquiring about the weather conditions at Port-Menier, the pilot decided not to fly there, but to return to Rivière-du-Loup and then Québec. After flying over the cottage of one of the passengers for a while, the pilot landed in Rivière-du-Loup to drop off his passengers. The flight time from Sept-Îles to Rivière-du-Loup was 3.4 hours.

After checking the weather, the pilot decided to continue on his flight to Québec without refuelling. Without checking the Cessna 172 flight manual, the pilot thought the aircraft's flight endurance was 6 hours. Considering the flight time already accumulated, which was 3.4 hours, and the planned en route time for Québec, which was 1.5 hours, the pilot felt it was not necessary to refuel.

After a short stopover, the pilot took off for Québec. On the way, the weather conditions deteriorated, and visibility was reduced by rain showers. The controller warned him that the weather conditions were below the VFR minima and gave him the latest special sequence at 2323 Coordinated Universal Time: 2½ miles in rain showers and mist, ceiling broken at 1400 feet, overcast at 3100 feet. The pilot then requested clearance from the Québec tower for a special VFR flight to land at his destination. The controller guided the pilot, and at about 9 miles on final approach for Runway 24, the engine sputtered. The pilot reported the problem to the controller, who directed him to the de la Capitale highway. A few moments later, the engine stopped and the pilot carried out a forced landing on the highway.

According to the *Canadian Aviation Regulations*, the pilot of an aircraft in day VFR flight must have sufficient fuel to fly to the destination aerodrome and then to fly for 30 minutes at normal cruising speed, and at night, to fly for 45 minutes. The aircraft's two fuel tanks have a total capacity of 38 U.S. gallons. According to the Cessna 172 owner's manual, the aircraft's flight endurance, at its maximum weight of 2300 pounds, could vary between 3.9 hours and 6.3 hours, depending on the power used and the altitude. To have an endurance of 6 hours, the aircraft

would have to be flown at a constant altitude of 10 000 feet with power operation at 2400 rpm, while also making the mixture leaner. Nothing indicates that these conditions were met during the last two legs of flight.

Examination of the aircraft at the accident site made it possible to conclude that no technical defects caused the engine to stop. Verification of the two fuel tanks made it possible to conclude that the engine stopped because of fuel exhaustion.

The following laboratory report was completed:

LP 069/03 – ELT & GPS Examination

This report is available upon request from the Transportation Safety Board of Canada.

### *Findings as to Causes and Contributing Factors*

1. Fuel exhaustion caused the engine to stop, requiring the pilot to carry out a forced landing onto the de la Capitale highway.
2. The pilot did not use the Cessna 172 flight manual to plan the amount of fuel required for his cross-country flight; he thought he had enough fuel to fly from Rivière-du-Loup to Québec.

*This report concludes the Transportation Safety Board's investigation into this occurrence. The Board authorized the release of this report on 11 May 2005.*

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