

AVIATION INVESTIGATION REPORT

A02Q0054

NOSE DOWN AND OVER ON TAKE-OFF

FLOAT-EQUIPPED CESSNA 180F C-FQCF

DES PASSES LAKE, QUEBEC

09 MAY 2002

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 180F, serial No. 18051212, took off at 0930 eastern daylight time, under visual flight rules, for a flight from Des Passes Lake, Quebec, to St. Augustin Lake, Quebec, with one pilot and two passengers on board. After taking off from the lake, the seaplane suddenly pitched nose-down, the left float dug into the water, and the aircraft overturned. The two passengers were able to exit the aircraft, and clung to the floats. The pilot drowned inside the aircraft. The two passengers then attempted to swim to shore, but one of them became exhausted, turned back and climbed onto one of the floats, and drowned a few seconds later when the aircraft sank. The other passenger reached dry land and proceeded to a cottage on the opposite shore, where he was able to warm up somewhat. He was found two days later by a friend coming to visit the cottage. Search and Rescue immediately transported him by helicopter to a hospital in Québec.

Ce rapport est également disponible en français.

Other Factual Information

The pilot was certified and qualified for the flight in accordance with existing regulations. He held a valid commercial pilot licence. According to his last civil aviation medical declaration form, he had accumulated 20 650 flying hours.

Records revealed that the aircraft was certified, equipped and maintained in accordance with existing regulations and approved procedures. There was no indication of any airframe failure or system malfunction during take-off. The aircraft had no known deficiencies before the flight, and its weight and centre of gravity were within the prescribed limits. During underwater searches, divers noted that the left door was closed and that the pilot was in his seat with his seat belt still buckled. On impact, torque forces generated by the engine were enough to tear the propeller pins from their hub and for one of the blades to cut a section of the left-front cylinder head. The propeller was not located, and engine power did not decrease before impact.

At the time of take-off, the winds at the Québec airport, 52 nautical miles southeast, were from the north at 16 knots, with gusts estimated at 21 knots. The lake used for take-off is approximately 6 500 metres long by 300 to 400 metres wide, and is oriented in a northeast southwest direction. The aircraft took off towards the southwest, but during the initial climb, the nose of the aircraft pitched down abruptly, with no reaction from the pilot. The left wing and float struck the water, and the aircraft overturned.

At his last medical examination, the pilot stated that he had hypertension and had been seen by an internal medicine specialist treating patients for a cardiovascular condition. The specialist had prescribed him medication for his high blood pressure. The pilot also stated that he had no symptoms of hypertension. The investigation determined that the pilot was diagnosed with coronary heart disease on 14 April 1991. The primary diagnosis was silent ischemia. On 30 May 1994, the pilot was hospitalized following a diagnosis of arteriosclerotic heart disease with silent ischemia. Silent ischemia is a condition characterized by a lack of blood flow to the heart that could lead to sudden incapacitation without warning signs or symptoms. The following day, the pilot underwent a coronary angiography and angioplasty of the right coronary artery. According to aviation medical examiner's files, neither this medical condition, nor the angioplasty performed on 31 May 1994, had been recorded in the pilot's file, and were never reported by the pilot. This information also does not appear in the pilot's responses to annual questionnaires, for the years covering 1994 to 2002, completed by the civil aviation medical examiner.

At his last medical examination, performed in 02 May 2002, the pilot mentioned that he had undergone an exercise electrocardiogram in the fall of 2001 at the Chauveau hospital under the supervision of his internal medicine specialist treating patients with a cardiovascular condition. The medical examiner had asked the pilot to provide him with a copy of the electrocardiogram results to assess them before signing his medical certificate renewal. A copy of the results of an exercise electrocardiogram, dated 15 June 2001, was forwarded to the civil aviation medical examiner. Upon receipt of the results, the civil aviation medical examiner assessed the document and signed the pilot's medical certificate. The regional civil aviation medical examiner

received the medical certificate renewal at the regional civil aviation office on 16 May 2002, seven days after the accident. He was unable to assess the pilot's medical records in light of the new information in time.

The autopsy performed on the pilot revealed that drowning was the likely cause of death. The pilot, however, suffered from significant coronary arteriosclerosis, to the extent that his condition could have resulted in heart problems such as angina pectoris, myocardial infarction, arrhythmia or another condition. Therefore, the possibility that the victim suffered a cardiac episode that resulted in the accident cannot be ruled out.

The pilot gave the passengers a safety briefing before the fishing trip. Neither of the passengers on the aircraft was wearing a life jacket at the time of the accident. Wearing a life jacket is not mandatory; however, in report SA9401 entitled *A Safety Study of Survivability in Seaplane Accidents*, the TSB recommended that Transport Canada require that all occupants of seaplanes wear a personal flotation device during the standing, taxiing, take-off, approach and landing phases of flight (A94-07). However, Transport Canada decided not to act on this recommendation due to the heightened risk of drowning if egress from a submerged aircraft was impeded by inadvertent or early inflation of a life jacket.

According to the regulations, life jackets must be of a colour that is easily visible. Typically, most life jackets currently in use are yellow. An essential feature of the approved life jackets is that they provide no flotation capability until they are activated. Life jackets are to be activated only after evacuating the aircraft to ensure that wearers do not float inside the aircraft, which may prevent them from reaching a submerged exit. The regulations require that a life jacket be available for each occupant of a seaplane. The only life jacket found on board the aircraft was a permanent flotation model intended for use on water craft; it was not of the type approved under aviation regulations.

Analysis

The aircraft was maintained in accordance with existing regulations, and there was no indication that a deficiency in the aircraft could have been a contributing factor in the crash.

All indications are that the pilot suffered an acute cardiac episode with sudden incapacitation during the climb-out, and that he had let go of the controls, resulting in the aircraft pitching nose-down. In fact, the autopsy determined the cause of death to be drowning, and that the victim suffered from severe coronary arteriosclerosis. This condition would explain his inaction when the aircraft pitched nose-down and during the evacuation; both passengers were conscious following impact, and managed to evacuate the aircraft, while only the pilot remained in his seat without attempting to unbuckle his seat belt.

The pilot never reported that he had a heart condition nor that he had been treated for that condition. He only reported that he was treated for hypertension, and provided a copy of the results of an exercise electrocardiogram dated 15 June 2001. Upon receipt of the results, the civil aviation medical examiner assessed the document and signed the pilot's medical certificate. The electrocardiogram provided by the specialist was from the previous year.

The fact that neither of the passengers was wearing a life jacket approved under aviation regulations at the time of take-off may have had an impact on the passenger's survival.

Findings as to Causes and Contributing Factors

1. The autopsy performed on the pilot revealed that the probable cause of death was drowning. The pilot did, however, suffer from significant coronary arteriosclerosis, to the extent that his condition could have led to sudden cardiac incapacitation.
2. The pilot and passengers were not wearing life jackets during take-off. Wearing a life jacket might have saved the passenger's life.

Findings as to Risk

1. A single life jacket, not of the type approved under aviation regulations, was found on board the aircraft.
2. Upon receipt of a copy of the results of an exercise electrocardiogram from the previous year, the civil aviation medical examiner assessed the document and signed the pilot's medical certificate.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 24 February 2004.

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