Transportation Safety Board of Canada

Bureau de la sécurité des transports du Canada

AVIATION INVESTIGATION REPORT
A08Q0187

VISUAL FLIGHT RULES FLIGHT INTO ADVERSE WEATHER AND FORCED LANDING

DHC-2 MK1 C-FYNT
CLUB CÉSAR (1993) INC.
PARENT, QUEBEC, 27 nm SW
23 SEPTEMBER 2008

Canada

Aviation Investigation Report

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Summary

The float-equipped DHC-2 Mk 1 aircraft, registration C-FYNT, serial number 1054, owned by Club César (1993) Inc., with the pilot and one passenger on board, was on a visual flight rules flight from Sainte-Véronique, Quebec to the outfitting operation on Lac César, Quebec. When the aircraft was about 30 nautical miles from the destination, the weather deteriorated. After a few minutes, the pilot could neither continue the flight nor reverse course. For several minutes, the pilot tried to find a safe spot for a water landing, without success. He then decided to set the aircraft down in the trees. The two occupants were wearing their seatbelts, were not injured, and had no difficulty evacuating the aircraft. The aircraft sustained substantial damage. The occurrence happened at approximately 1530 eastern daylight time.

Ce rapport est également disponible en français.

Other Factual Information

Club César (1993) Inc. owns an outfitter facility at its main base on Lac César, Quebec, in the Haute-Mauricie region of the province. The company owns several hunting and fishing camps that are accessible only by floatplane. For that reason, Club César operates two aircraft: a Cessna 185 and a DHC-2 Beaver. The company was issued an air operator certificate on 10 October 1996 under approval number 8468. As an air operator, Club César (1993) Inc. is authorized to use these two aircraft types pursuant to subparts 702 and 703 of the *Canadian Aviation Regulations* (CARs).

The DHC-2 Mk 1 was fitted with EDO 679-4930 floats. As of the time of the accident, it had flown a total of 15 813 hours since it was built in 1956. Review of the technical records indicates that the aircraft was certified and maintained in accordance with existing regulations. There was no evidence found of any airframe failure or system malfunction during the flight.

The pilot, owner of the Club César (1993) Inc. outfitting operation since 2005, held a valid commercial pilot licence endorsed for single-engine landplanes and seaplanes. He had about 2600 flying hours, including 900 on the DHC-2. He held the positions of operations manager and chief pilot of Club César (1993) Inc. since 2007. Generally, his daily activities break down as follows: 20 per cent as outfitter manager and 80 per cent as operations manager and chief pilot. He was well-rested on the day of the accident. Fatigue was not a contributing factor.

At approximately 1030 eastern daylight time (EDT) [1] on the day of the accident, the aircraft departed the Lac César base for Sainte-Véronique, Quebec, some 78 nautical miles (nm) to the south, with the pilot and two passengers on board. This flight lasted 55 minutes and was without incident. The weather was suitable for visual flight rules (VFR) flight. As indicated in the company operations manual with regard to flight watch, the pilot called the Lac César base upon arrival at Sainte-Véronique. The pilot had no operational obligation to return to the Lac César base by a specific time. The return flight would generate no revenue.

After eating lunch and refuelling and loading the aircraft, the pilot called the base at Lac César around 1330 to inquire about the weather. The flight service employee advised him that conditions were suitable for flight but there were scattered rain showers at times. The pilot advised the employee that he was just about to leave. He did not file a flight plan, nor was he required by regulation to do so.

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1 All times are eastern daylight time (Coordinated Universal Time minus four hours).

On the return flight, the pilot was accompanied by one passenger in the right seat. The aircraft was carrying 775 pounds of cargo, consisting mostly of perishable foods. According to the weight and balance sheet, the aircraft weight and balance on departure from Sainte-Véronique was within the prescribed limits. The weight of the cargo could not be determined by the investigators. When the aircraft was recovered, the perishable foods had been scattered and eaten by wildlife.

C-FYNT is equipped with three fuel tanks (forward, centre, and aft tanks) in the belly of the aircraft. On departure from Sainte-Véronique, the forward and centre tanks contained 28 and 10 Imperial gallons, respectively, and the aft tank was empty. This quantity of fuel was sufficient for a just over two hours of flight, which is in compliance with the CARs [2] because the flight was expected to take about 50 minutes.

The aircraft took off from Sainte-Véronique at around 1430 and established a cruising altitude varying between 2600 and 2700 feet above sea level (about 600 feet above ground level). The pilot had flown the route often and was very familiar with it. In the area of Mitchinamecus reservoir and 30 nm from the destination, the weather deteriorated to the point where the pilot was forced to descend. By the time the aircraft had passed the power line at the Bazin River, its altitude and the low ceiling prevented the pilot from clearing the mountains that lay between him and Lac César. An option at that point was one of the outfitter camps near his position on Lac Gilberte. However, that location was now inaccessible because the ceiling prevented him from crossing back over the power line again (See Appendix A – Map of the Area).

For about 20 minutes, the pilot flew circles about five miles in radius, hoping that the weather would improve. However, conditions did not improve and the pilot was no longer able to either reverse course or divert. The pilot looked for a safe water landing site, but the only lake available to him was too short for a landing.

The pilot tried several times to contact the employee at the Lac César base, but was unsuccessful, probably because the aircraft altitude was too low. Because he was not qualified for instrument flight, he decided not to climb into cloud and instrument flight rules (IFR) conditions. Seeing that he was low on fuel, he decided to set the aircraft down in the trees rather than land on a lake that was too short. Both occupants were wearing their seatbelts—consisting of a lap belt and shoulder strap—and they were not injured.

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[2] Subparagraph 602.88(3)(a)(i) of the CARs requires that sufficient fuel be carried to fly to the destination aerodrome and then to fly for a period of 30 minutes at normal cruising speed.

The aircraft crashed at approximately 1530 about eight miles from its destination. It struck the trees at low speed and the floats absorbed most of the impact forces. After the collision, the front part of the floats was touching the ground and the wings and empennage were holding the aircraft in a nose-down position. The aircraft sustained major damage to its two floats and damage was also observed on the underside of both wings. The cabin was not significantly deformed and the two forward seats and seatbelts withstood the impact forces; this explains the absence of injuries to the occupants. The emergency locator transmitter (ELT) activated on impact and its signal was readable.

Because the pilot knew the terrain, the occupants agreed that they would leave the site. Before leaving, the pilot switched the ELT in the cockpit to the ON position and took his portable global positioning system (GPS) device with him.

The pilot and passenger walked to a logging road; from there they were able to reach the Lac Gilberte base by about 1800. No one was there when they arrived. It was not until an hour and a half later that the base personnel arrived and they were able to contact the Lac César base. When the employee at Lac César received the call, which was at about 1930, she understood that the pilot and aircraft were at Lac Gilberte, but satellite communication was suddenly lost and could not be restored. The employee mistakenly believed that the pilot had landed at Lac Gilberte and was waiting for the weather to clear.

Meanwhile, the Canadian Forces Search-and-Rescue (SAR) Centre at Trenton, Ontario and aircraft at altitude had picked up a distress signal in the area of Parent, Quebec. A Hercules airplane and a Griffon helicopter were dispatched to the site. The accident aircraft was located at 1923. Seeing no signs of life, SAR personnel were parachuted onto the site. They observed that no one was in or near the accident aircraft. Subsequent searches could not locate the occupants of the accident aircraft.

The employees at Lac César could see and hear the SAR aircraft in the area. The employee contacted the SAR Centre around 2028. She was informed that the SAR Centre had received a distress signal and they were searching for an aircraft in the Parent area. It was not until the pilot and passenger of C-FYNT arrived at around 2100 that the employee learned that the pilot and passenger had had an accident and were the objects of the search.

The emergency plan in the company operations manual requires that the operations manager or other person responsible immediately advise the SAR Centre if an aircraft does not arrive at its destination one hour following its scheduled arrival time and if no flight plan has been filed with an air traffic services unit. When she saw that the flight was late and the weather conditions were unfavourable, the employee took initial action in the late afternoon and called Sainte-Véronique to confirm that the aircraft had taken off.

This was not the first time that a company aircraft failed to arrive at its destination. In some cases pilots have been forced to land on a lake because they encountered poor weather conditions. In some cases, they had to spend the night on the lake. But in all such cases, the pilots used a satellite telephone to advise the flight service employee of the situation. In this occurrence, the pilot of C-FYNT did not have his satellite telephone on board, but the employee did not know that.

The pilot of C-FYNT was not in the habit of requesting a full meteorological briefing from the flight information centre (FIC). The aerodromes closest to the outfitter that issued routine meteorological terminal air reports (METARs) and terminal aerodrome forecasts (TAFs) are: Montreal/Mirabel 132 nm to the southeast, Roberval 127 nm to the east, and Val-d'Or 103 nm to the west-northwest. The pilot preferred to get verbal briefings on the current conditions from his base and other operators in the area. The TSB asked Environment Canada for a detailed analysis of the weather conditions in the area traversed by the return flight on 23 September 2008.

The graphic area forecast (see Appendix B – Graphic Area Forecast – GFACN33 CWAO) for Ontario and Quebec (GFACN33 CWAO) issued at 1741 Z [3] on 23 September 2008, valid at 1800 Z (1400 EDT) was as follows:

> [Translation]
> An area of broken cloud based at 4000 feet with tops at 12 000 feet was over Parent, located 28 nm northeast of the outfitter base. Visibility was over 6 statute miles. Approximately 60 miles west of Parent and embedded in the previously mentioned area was an area of overcast cloud based at 3000 feet with tops at 10 000 feet, with visibility from 4 to over 6 statute miles in showers and mist. Scattered towering cumulus with tops to 22 000 feet were also forecast within this area of cloud. No turbulence or icing was forecast for the area near Parent on 23 September 2008. Although these conditions are suitable for VFR flight, the graphic area forecast (GFA) did indicate the possibility of showers and mist in the Parent area. No short-term weather advisories (AIRMET) [4] or significant meteorological information (SIGMETs) [5] were issued during this period.

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3 Z = Coordinated Universal Time.

4 An AIRMET is a short-term weather advisory intended mainly to warn pilots in the air of potentially hazardous weather conditions not mentioned in current GFAs.

5 A SIGMET contains weather information issued to report weather conditions that could affect aircraft safety—for example, storm fronts and heavy turbulence.

Data from the automated weather observation station (AWOS) for the Parent area revealed increasing water vapour levels starting at 1700 Z, with near-total saturation [6] occurring between 2000 Z and 2100 Z (see Appendix C – Temperature and dew point based on surface weather observations at Parent [WPK] on 23 September 2008). As a result, mist, fog and low ceilings were possible in the area of Parent at 1900 Z.

Analysis

The pilot was qualified for the flight. There was no pressure on him to return to Lac César, particularly because the flight would generate no revenue. The aircraft had no known deficiencies and was maintained in good condition for flight.

The pilot checked the local weather with the Lac César camp before departing Sainte-Véronique. According to the camp employee, the flying conditions were suitable for the return flight. The pilot did not request a weather briefing from the FIC, nor was he in the habit of doing so. In any event, even if he had checked with the FIC, there was nothing in the forecast to suggest that the weather would be such as he encountered en route. The pilot's decision to make the flight was justified. When the conditions deteriorated en route, he delayed making a decision as to whether to turn back or land. It is possible that being close to his destination and being very familiar with the area influenced his decision to continue the flight until he had exhausted all options.

The pilot decided to set the ELT to ON even though he had decided to leave the site. This decision may have had adverse consequences if one of the accident aircraft occupants was injured while walking, especially considering that there was no means of communication available to them. As well, with the main reason for activating an ELT being to save lives, the SAR team was deployed in adverse weather, needlessly putting them at risk.

It was not unusual for aircraft to not arrive at the destination at the expected time. Consequently, the employee at Lac César was not overly concerned. She did not know that the pilot was unable to contact her and inform her of the occurrence because he had not brought his satellite phone with him on this trip. The call received that evening from Lac Gilberte, which became disconnected, gave reason to believe that the flight had diverted due to weather and had landed safely. However, knowing that the aircraft had departed Sainte-Véronique, that it was past its expected arrival time, and that no call had been received to explain why it was late, the emergency plan should have been activated automatically in accordance with the procedure set out in the company operations manual. Not having activated the company emergency plan could have led to grave consequences if the occupants had been seriously injured in this accident.

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6 Saturation exists when an air mass at a given temperature contains the maximum quantity of water vapour that it is capable of containing. The degree of saturation is determined by the difference between the temperature and the dew point. The smaller the difference, the greater the saturation. When the difference is less than 2°C, fog can be expected.

Finding as to Causes and Contributing Factors

1. The pilot delayed making a decision as to whether to turn back or land when he saw that the weather was deteriorating. Being close to his destination and being very familiar with the area probably influenced his decision to continue the flight until he had exhausted all options.

Findings as to Risk

1. Although the main reason for activating an emergency locator transmitter (ELT) is to save lives, the pilot decided to depart the site and leave the ELT set to ON. As a result, the search and rescue team was deployed in unfavourable weather conditions, needlessly putting them at risk.

2. Not having activated the company emergency plan could have led to grave consequences if the occupants of the downed aircraft had been seriously injured.

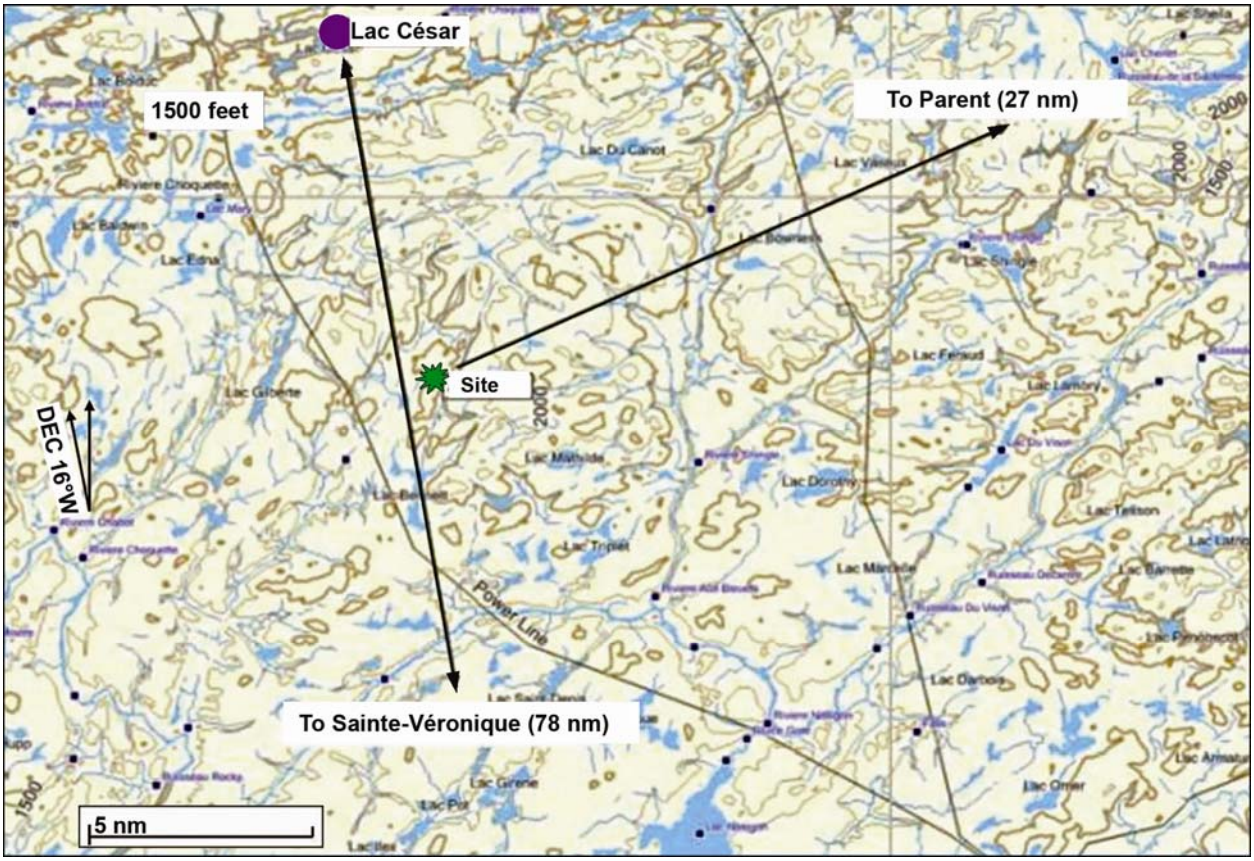
Other Finding

1. There was nothing in the forecast to suggest that the weather would be as the pilot encountered en route. The pilot's decision to make the flight was therefore justified.

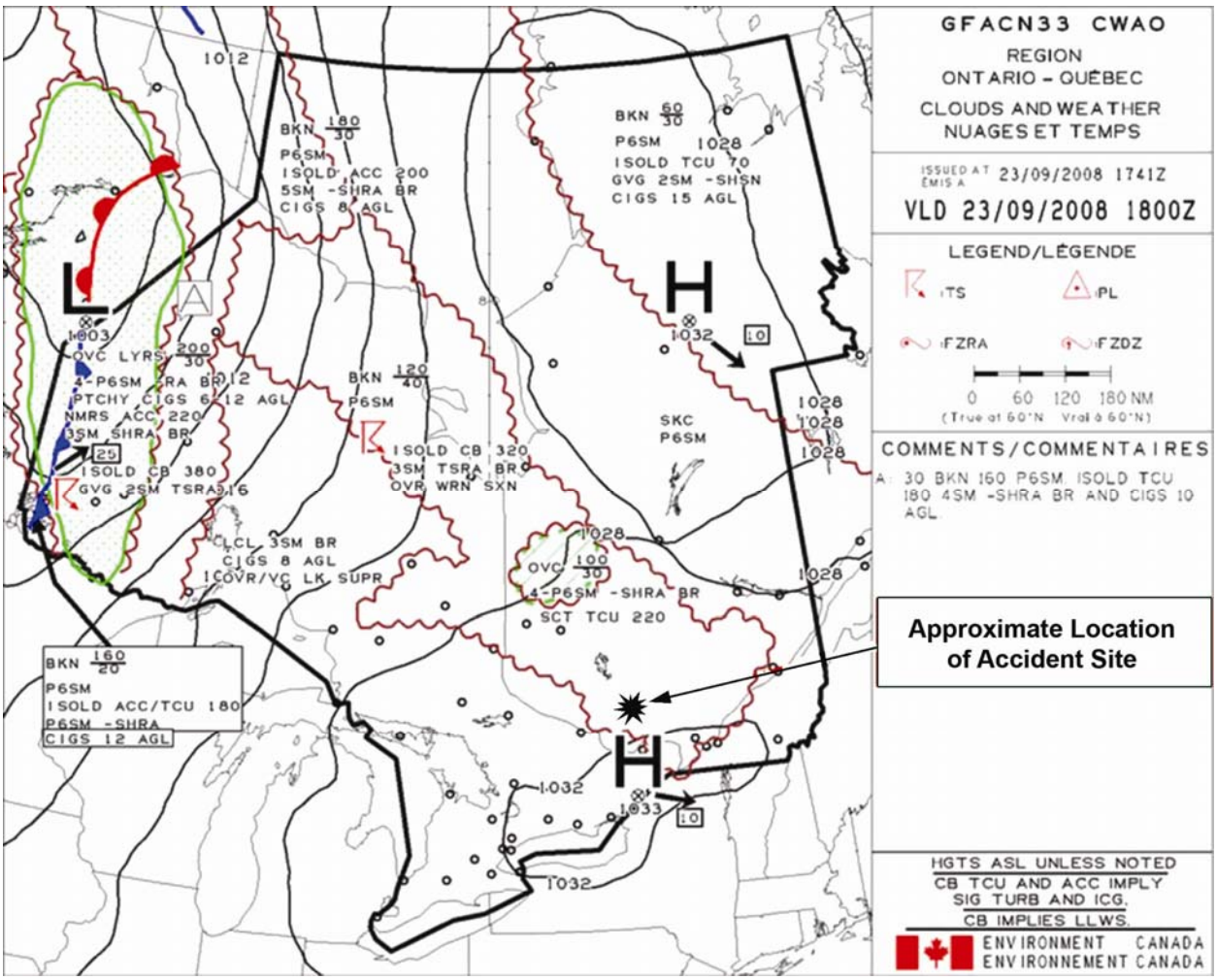
This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 12 June 2009.

Visit the Transportation Safety Board's Web site (www.bst-tsb.gc.ca) for information about the Transportation Safety Board and its products and services. There you will also find links to other safety organizations and related sites.

Appendix A – Map of the Area



Appendix B – Graphic Area Forecast – GFACN33 CWAO



Appendix C – Temperature and dew point based on surface weather observations at Parent (WPK) on 23 September 2008

Time (Z)	Temperature	Dew point
0100	**3.3**	**2.8**
0200	**2.8**	**2.6**
0300	**1.4**	**1.1**
0400	**0.6**	**0.4**
0500	**0.6**	**0.5**
0600	**-0.4**	**-0.4**
0700	**-0.1**	**-0.1**
0800	**-1.0**	**-1.0**
0900	**-0.7**	**-0.7**
1000	**0.3**	**0.3**
1100	**2.0**	**2.0**
1200	**3.8**	**3.8**
1300	**6.8**	**5.9**
1400	**10.5**	**7.1**
1500	**10.5**	**6.9**
1600	**10.7**	**8.0**
1700	**10.1**	**8.0**
1800	**10.3**	**8.5**
1900	**10.0**	**8.7**
2000	**10.1**	**9.1**
2100	**10.2**	**9.2**