

AVIATION INVESTIGATION REPORT

A9900242

COLLISION WITH TERRAIN

COMPTON AIRWAYS LTD.

CESSNA 172M C-GUVC

BANCROFT, ONTARIO 1 NM W

10 OCTOBER 1999

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 172M, serial number 17267320, departed Bancroft, Ontario, at 0915 eastern daylight saving time on a visual flight rules local sightseeing flight. Approximately 15 minutes after take-off, the pilot encountered deteriorating weather and elected to return to Bancroft. The pilot, who had a valid instrument rating, climbed into cloud rather than attempt to maintain visual flight rules in weather that he assessed to be unsuitable for continued visual flight rules flight. With the aircraft automatic direction finder tuned to the local broadcast radio station, the pilot flew in instrument meteorological conditions at 2600 feet above sea level in the vicinity of the Bancroft Aerodrome, waiting for the weather to improve. After approximately one hour in solid instrument meteorological conditions, the pilot climbed to 3000 to 4000 feet above sea level and contacted Toronto Radio for the latest weather. His fuel supply was running low and, with no observable improvement in the weather, he decided to attempt a landing at Bancroft Aerodrome.

The pilot descended to 300 to 400 feet above ground level before regaining visual reference to the ground in an area where the visibility was one-quarter mile in fog. He then turned the aircraft to a southerly heading in an attempt to set up for a visual approach to runway 12 at Bancroft. He turned to what he estimated to be the final approach course but encountered rising terrain. The aircraft struck trees and crashed on a wooded hillside approximately one mile west of the aerodrome at 1106 eastern daylight saving time. The pilot and two passengers evacuated the aircraft with minor injuries, and the aircraft was consumed by a post-crash fire.

Ce rapport est également disponible en français.

Other Factual Information

Prior to leaving home on the day of the occurrence, the pilot checked the weather on the Internet. He then observed the weather during his drive to the aerodrome and on arrival, he called Kingston flight service station (FSS) for the forecasts for Muskoka, 60 nautical miles (nm) west, Peterborough, 55 nm south, and surrounding areas. The only weather information available for the Bancroft Aerodrome was the area forecast (FA) and the report from the automated weather observation system (AWOS). No aerodrome forecast (TAF) or aviation routine weather report (METAR) was available for the Bancroft Aerodrome. He received the following weather forecasts for the morning of 10 October 1999:

Muskoka (YQA)—From 0800¹ until 1100, wind 160 degrees true at 5 knots (kt), visibility one-half statute mile (sm) in fog, overcast cloud at 1500 feet; temporary visibility 3 sm in mist, overcast cloud at 2000 feet. After 1100, the weather was forecast to improve to visibility 4 sm in mist, broken cloud at 2000 feet.

Peterborough (YPQ)—From 0800 until 1100, wind 160 degrees true at 5 kt, visibility 0.5 sm in fog, overcast cloud at 3000 feet; temporary visibility 3 sm in mist. After 1100, the weather was forecast to improve to visibility 4 sm in mist, with a broken cloud layer at 2000 feet.

The report from the automated weather reporting station at Bancroft Aerodrome, which the pilot did not check, was showing light winds and 100 percent relative humidity throughout the morning.

Based on the weather that the pilot observed at the aerodrome and during the drive from home, he elected to conduct the first scheduled sightseeing flight. He took off at 0815 and flew an uneventful half-hour flight during which he observed the weather to be quite acceptable for visual flight rules (VFR) flight. He estimated the ceiling to be at 1500 feet above ground level (agl) and well defined, with in-flight visibility of eight to ten miles. After landing at approximately 0845, he telephoned Kingston FSS to give a pilot report (PIREP) based on having observed weather that was significantly better than forecast.

The pilot did not add fuel before the next flight since he estimated the aircraft fuel to be 15 to 16 gallons, or 1 hour and 45 minutes of fuel on board, adequate for the scheduled one-hour flight. The pilot routinely departed on sightseeing flights with the fuel tanks approximately half full. Occasionally in the past, clients had arrived for flights with additional passengers and he had been forced to de-fuel in order to keep the aircraft under maximum gross weight. The aircraft, with a full fuel load of approximately 35 imperial gallons and the pilot, could exceed its maximum gross weight with three large adult passengers.

He then prepared for the next flight. After filing a VFR flight plan and briefing his passengers, he departed at 0915. When he encountered deteriorating weather, he elected to climb into instrument meteorological conditions (IMC) during the return to Bancroft although he did not carry instrument flight rules (IFR) publications such as *Canada Air Pilot Instrument Procedures*. His portable global positioning system was

¹ All times are eastern daylight saving time (EDT) (coordinated universal time (UTC) minus four hours) unless otherwise stated.

unreliable, so the only navigation aid was the automatic direction finder (ADF). The Bancroft Aerodrome is not equipped with any instrument approach aid, so the pilot used the local broadcast radio station as a navigation aid and set up a holding pattern at 2600 feet above sea level (asl) in the vicinity of the aerodrome. The *Canada Flight Supplement* and the *Enroute Low Altitude Chart* depict 3000 feet asl as the minimum altitude that will ensure a 1000-foot clearance above all obstacles in the Bancroft area.

After holding in solid IMC in controlled airspace for approximately one hour, the pilot climbed to between 3000 and 4000 feet asl and attempted to contact Toronto Radio. At this altitude he was still in IMC, but there were indications that he was nearing the cloud tops. After numerous attempts on several frequencies, the pilot was able to communicate with Toronto, although the quality of the radio reception was poor. He was successful in determining the weather in Muskoka and in Peterborough.

The pilot decided that he had no option but to try to land at Bancroft. He descended to 2600 feet asl and, using the local broadcast radio station for navigation, fixed the aircraft position over the aerodrome and began a gradual descent to the north over known flat terrain. The pilot descended until he gained visual reference with the ground at 300 to 400 feet agl. He estimated the visibility at this altitude to be one-quarter mile. He recognized the terrain and was relatively sure of his position so he turned to the south and attempted to set up for a close-in left base for runway 12. Using very limited visual cues and the ADF, the pilot turned for runway 12 when he believed he was lined up with the runway, although he could not see the airfield. His position was actually further south and west of the airfield than expected. The aircraft struck trees and crashed on a hillside approximately one mile west of the aerodrome. The pilot evacuated the aircraft through the cabin door and then helped the two passengers evacuate. The aircraft was subsequently consumed by the post-crash fire.

Maintenance records indicate that the aircraft was certified and maintained for flight in accordance with existing regulations.

The pilot was certified and qualified for the flight in accordance with existing regulations. He held a valid Group 3 instrument rating, but he did not have practical experience in IFR flight. He had 6.2 hours of experience in actual IMC, 65 hours of simulated IMC, and 24 hours in simulators. The pilot had only filed an IFR flight plan on one occasion.

Analysis

Although the forecasts for Muskoka and Peterborough called for low visibility in fog throughout most of the morning, the pilot was influenced by the relatively good weather that he observed both at the airfield and during his drive from home for his first scenic flight. The decision to fly the occurrence flight was based on the weather he observed during the first flight. He did not use all of the weather information available to him since he did not check the automated weather station read-out. Fog could quickly form in the Bancroft area because of the light winds and 100 percent relative humidity.

When the pilot encountered deteriorating weather and reversed course to return to Bancroft, he decided to climb to a safe altitude even though this action would place him in solid IMC conditions. He expected to fly

quickly through a very localized patch of weather and then regain visual meteorological conditions (VMC) and continue the return flight to Bancroft. He climbed to 2600 feet asl, believing that to be a safe altitude. At no time did the pilot attempt to change to an IFR flight plan. Similarly, he never attempted to climb on top of the cloud layer to regain VMC. Once forced to terminate the VFR sightseeing flight, an early decision to climb on top of the cloud in order to regain VMC would have decreased the pilot's workload and simplified his decision making considerably.

Based on available weather reports for the area and the clouds observed by the pilot while holding, VMC conditions were present at a higher altitude (6000 to 8000 feet asl). A climb to this altitude early in the holding pattern would have allowed for clearer, more expedient communications with Toronto Radio, rather than the poor quality reception and the delays experienced while holding at 3000 to 4000 feet asl. Toronto Radio would have been able to provide the pilot with detailed weather information regarding the fog and low ceilings throughout the entire area and with the assistance required to obtain an IFR clearance. By the time the pilot eventually climbed and contacted Toronto Radio, he was already becoming concerned about his fuel supply. When he realized that the weather in the surrounding area was poor, he decided that he had to make a landing attempt at Bancroft Aerodrome by conducting an IMC cloud-breaking procedure. When he broke out of the clouds, the low ceiling and limited visibility prevented him from conducting a successful visual approach.

Findings

1. The pilot was certified and qualified for the flight in accordance with existing regulations.
2. Maintenance records indicate that the aircraft was certified and maintained for flight in accordance with existing regulations.
3. The only weather information available for the Bancroft Aerodrome was the FA and the AWOS report. The pilot did not check the AWOS report for Bancroft; his decision to fly the occurrence flight was based on the weather he observed during the first flight of the day.
4. Although the pilot held a valid instrument rating, he had very little experience in an IFR environment.
5. The pilot was not prepared for in-flight weather conditions that would force him to fly in IMC and change from a VFR flight plan to an IFR flight plan.
6. The pilot's lack of familiarity in an IFR environment, coupled with his expectation that the low cloud at Bancroft would dissipate as quickly as it had formed, heavily influenced his decision to hold in the vicinity of Bancroft.
7. The pilot flew in IMC in controlled airspace in the vicinity of Bancroft without an IFR clearance and at an altitude below the IFR minimum safe altitude.

Causes and Contributing Factors

The pilot crashed on a wooded hillside as a result of his attempt to do a cloud-breaking procedure using a local broadcast radio station for navigation and to descend below safe altitude in IMC conditions to set up for a visual approach. Contributing to the occurrence were the pilot not using all available weather information, his lack of preparation for a rapidly deteriorating weather situation, and his inappropriate decision making.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 09 May 2000.