

Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

AVIATION INVESTIGATION REPORT

A05W0176



CONTROLLED FLIGHT INTO TERRAIN

**CESSNA 180H C-FYIX
MOUNT BURNS, ALBERTA
22 AUGUST 2005**

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

Controlled Flight into Terrain

Cessna 180H C-FYIX
Mount Burns, Alberta
22 August 2005

Report Number A05W0176

Summary

The privately operated Cessna 180H (registration C-FYIX, serial number 52035) departed Springbank, Alberta, at 1106 mountain daylight time, on a visual flight rules flight to Boundary Bay, British Columbia. The aircraft was last recorded on air traffic control radar approximately 34 miles southwest of Springbank at 8700 feet above sea level. The aircraft did not arrive in Boundary Bay, and there was no further contact with the flight. After an extensive search, the aircraft wreckage was found on the afternoon of 29 August 2005 at the 8850-foot level on the east slope of Mount Burns in the Kananaskis region of Alberta. The aircraft was destroyed by impact forces and a severe post-impact fire. Both occupants sustained fatal injuries.

Ce rapport est également disponible en français.

Other Factual Information

The pilot had obtained a telephone weather briefing from the Edmonton Flight Information Centre (FIC) at 0738 mountain daylight time¹ on the morning of the flight. The briefing indicated that visual meteorological conditions (VMC) existed in the mountain passes between Alberta and British Columbia, and were expected to persist throughout the flight. The pilot filed a visual flight rules (VFR) flight plan, which included a direct routing from Springbank (CYBW) to Cranbrook, British Columbia (CYXC), at 12 500 feet above sea level.²

The observed 1100 weather at Springbank was as follows: light southerly winds, visibility 30 statute miles (sm), few clouds at 4000 feet above ground level (agl) and 8000 feet agl, broken clouds at 24 000 feet agl, temperature 15°C and dew point 6°C. The 1100 weather at Cranbrook was as follows: calm winds, visibility 25 sm, few clouds at 13 000 feet agl, overcast cloud at 22 000 feet agl, temperature 14°C, and dew point 4°C.

The graphical area forecast (GFA) valid for six hours from 0600 indicated that a weakening cold front was moving through the planned flight route. Broken cloud layers were expected between 9000 feet and 18 000 feet, with isolated embedded altocumulus castellanus (ACC) giving visibilities more than 6 sm in light rain showers.

Environment Canada's analysis of conditions at the accident site indicated scattered to broken cumulus based at 6000 feet with tops at 7000 feet, and broken to overcast ACC based between 8000 and 9000 feet with tops between 10 000 and 12 000 feet. Downflow and occasional moderate turbulence were predicted on the eastern slopes of the mountains in a southwesterly flow of up to 30 knots. Icing was not likely to have been present.

Generally, VMC existed at the lower levels in the mountain passes between Springbank and Cranbrook. The direct route flown by the pilot did not make use of these passes. Clouds were visible on the mountains to the southwest of Springbank when the pilot obtained a weather update from the FIC at 0934.

Routine weather observations were recorded at two Alberta Forest Protection Service lookout towers: at Moose Mountain (18 nm north of the accident site) and at Junction Mountain (10 nm to the southeast). At the time of the only official observations at 0700, cloud covered both lookouts. The cloud had lifted by 1100; however, the higher mountain tops were still obscured by broken cloud at the time of the accident.

A pilot who flew from Fairmont, British Columbia, to Springbank at about 1000 reported that cloud, which was topped at 10 000 feet, obscured the mountain tops on the east slopes of the Rocky Mountains.

¹ All times are mountain daylight time (Coordinated Universal Time minus six hours).

² All altitudes are above sea level (asl) unless otherwise noted.

Air traffic control radar at the Calgary NAV CANADA facility tracked the aircraft from shortly after take-off until impact. After departure, the aircraft climbed to 8300 feet on a track of 229° true (T) and gradually drifted down to 7900 feet. The aircraft then commenced a climb and struck the mountain about two minutes later at 1127. The last recorded heading was 195°T, which was 17° left of the direct track from Springbank to Cranbrook. The aircraft's ground speed was recorded at between 80 and 120 knots during this period.

The aircraft contacted a near vertical cliff on the northeast face of a 9000-foot ridge. The point of impact was about 50 feet from the top of the ridge, which was oriented southeast to northwest. Damage to the aircraft indicated that it was in straight and level flight at the time of impact.

Most of the wreckage came to rest on a steep scree slope about 100 feet below the point of impact. Small pieces of wreckage were found on the other side of the ridge. A fuel-fed, post-impact fire consumed most of the aircraft. The pilot was found with the wreckage, and the passenger was found about 500 feet below. The propeller was not found; however, examination of the engine crankshaft indicated that the engine was delivering some power at impact. Higher terrain existed within one mile on an extension of the aircraft's track past the ridge (see Photo 1).

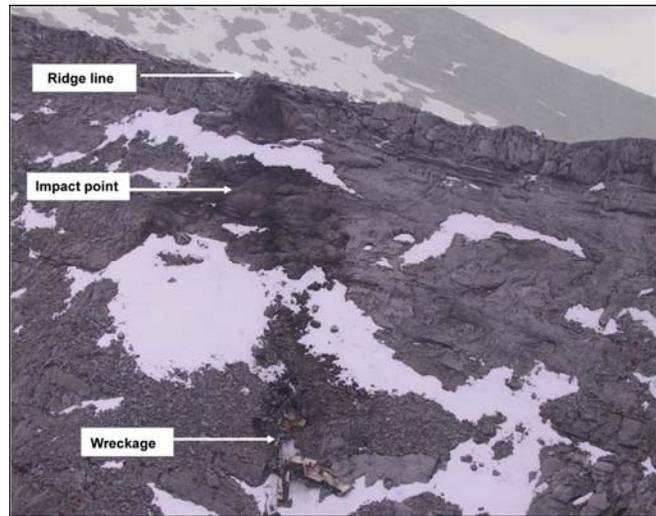


Photo 1. View of accident site

Search and rescue (SAR) was activated within one hour of the aircraft being declared overdue on its flight plan. The aircraft had disappeared from radar at the point where normal radar coverage ends from the Calgary site, and, on the day of the accident, radar service was not available past that point. Although the aircraft was found within 2 nm of the flight planned track, visual sighting of the wreckage was difficult due to the large search area involved, extremely rugged mountainous terrain, patchy snow cover, and break up of the aircraft from impact and fire.

The pilot held a private pilot licence restricted to VFR and had accumulated about 1500 flight hours, most of which were on C-FYIX. He had passed a Category 1 medical examination on 26 July 2004, which validated his licence to 01 August 2006. Based on autopsy, toxicology, and medical records, there was nothing found to indicate that the pilot's performance was degraded by physiological factors.

The aircraft, manufactured in 1969, had been owned by the pilot since 1981 and had accumulated 3173 hours. Records indicated that it was certified, maintained, and equipped in accordance with existing regulations and approved procedures. The aircraft was refuelled with 213 litres of avgas at Springbank on 20 August 2005 and was not flown until the accident flight.

The Flight Safety Foundation defines a controlled flight into terrain (CFIT) accident as “one in which an airworthy aircraft, under the control of the crew, is flown unintentionally into terrain, obstacles, or water with no prior awareness on the part of the crew of the impending collision.”³

Analysis

The occurrence fits the definition of CFIT. Since it does not appear that significant, timely evasive manoeuvres were attempted to avoid impact with the mountain, it is likely that the pilot did not have visual contact with the mountain top. The flight profile obtained from air traffic control (ATC) radar data and wreckage trail analysis suggests that, at the time of impact, the aircraft was under control and the engine was developing power. Since the aircraft struck the ridge at a relatively stable airspeed and heading (straight and level flight), it is likely that the pilot’s vision was obscured by cloud immediately before impact. It is also possible that, in attempting to cross the ridge, the aircraft entered a downdraft and was unable to out-climb the terrain. Had the aircraft successfully crossed the 9000-foot ridge, its track would have intercepted significantly higher terrain within one mile.

The pilot’s weather briefing was correct in that good VFR conditions existed in the mountain passes and at both ends of the first leg of the planned flight route from Springbank to Cranbrook. Although his briefing detailed existing and forecast weather in the passes, a direct route was filed and flown. Since there was broken cloud obscuring most of the high mountain tops along the east slopes of the mountains, weather conditions encountered by the aircraft at the altitude flown on the direct route would have been worse than those at the lower levels in the passes.

Finding as to Causes and Contributing Factors

1. The aircraft was likely flown into cloud, which prevented the pilot from seeing and avoiding the high mountainous terrain.

This report concludes the Transportation Safety Board’s investigation into this occurrence. Consequently, the Board authorized the release of this report on 04 January 2007.

Visit the Transportation Safety Board’s Web site (www.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.

³ “An Analysis of Controlled Flight Into Terrain (CFIT) Accidents of Commercial Operators, 1998 through 1994,” *Flight Safety Foundation Flight Safety Digest*, April–May 1996, p. 4.