



**Final Report
of the Aircraft Accident
Investigation Bureau**

on the accident

to the Piper Aztec PA-23-250 aircraft, registration C-FBQS
on 5 July 2000
12 km south of the town of Bulle (FR)
near the Pointe de Cray (FR)

URSACHE

Der Unfall ist darauf zurückzuführen, dass der Pilot einen Sichtflug unter Instrumentenflugwetterbedingungen weitergeführt hat. In der Folge ist das Flugzeug mit einem Berg kollidiert.

This report has been prepared for the purpose of accident/incident prevention. The legal assessment of accident/incident causes and circumstances is no concern of the incident investigation (art. 24 of the air navigation law of 21 December 1948, LA, RS 748.0).

Owner:	Private
Operator:	Private
Aircraft model	Piper Aztec PA-23-250
Nationality:	Canadian
Registration:	C-FBQS
Location:	West of the Pointe de Cray (FR), 12 km south of Bulle
Date and time:	5 July 2000, approx. 13:00 hours ¹

0. Synopsis

0.1 Summary

On 5 July 2000, the pilot of the aircraft, registration C-FBQS, took off from Saanen airfield in bad weather conditions, with the intention of flying to Canada.

Approximately 15 minutes later, the aircraft struck a mountain approximately 12 km south of the town of Bulle.

The pilot was killed on impact and the aircraft was destroyed.

0.2 Investigation

The accident took place on Saturday 5 August 2000 at about 13:00 hours. It was notified by the Garde Aérienne Suisse de Sauvetage (Rega) to the Aircraft Accident Investigation Bureau (Bureau d'enquête sur les accidents d'aviation - BEAA) at 13:46 hours on Sunday 06 August 2000. The investigation was opened the same day at 16:45 hours at the site of the accident and conducted in collaboration with the Fribourg cantonal police.

¹ All times in this report are local times (UTC+2).

1 FACTUAL INFORMATION

1.1 History

1.1.1 Preliminary

On 11 July 2000, the pilot left Toronto Buttonville Mui airport onboard his Piper Aztec aircraft with the intention of travelling to Saanen, in Switzerland.

His route was Toronto – Sept Iles – Goose Bay – Godthab – Kulusuk – Reykjavik – Wick – Saanen, where he arrived on 18 July 2000.

The pilot was visiting his daughter who was in the Saanen region.

1.1.2 Flight history

On Saturday 5 August 2000, the pilot wanted to return to Canada. To do this, his first stage was to Cardiff (GB). On the previous day, 4 August 2000, he had refuelled his aircraft, adding 464 litres of fuel. He arrived at the airfield at about 08:00 hours.

The Flight Information Service (FIS) manager warned him that in his opinion it was impossible to take off, because the weather conditions were too bad. The pilot then went to drink a coffee in the company of two pilots from the region. Then he prepared and submitted his flight plan. His intention was to leave Saanen under Visual Flight Rules (VFR) as far as waypoint REVLI, and then to continue under Instrument Flight Rules (IFR). He had a satellite navigation system (GPS), which he also prepared.

A discussion started with his two colleagues regarding the two possible options of leaving the valley in poor weather conditions. The first consists of following the valley as far as Gruyères under VFR and from waypoint REVLI to continue under IFR. The second is to climb above the airfield to the minimum safe height of 9000 ft and then to follow the direction of the REVLI waypoint.

Given that one of the two pilots had to go to Gruyères with a Pilatus Porter aircraft, he proposed that he would telephone him when he had landed in order to let him know the weather conditions encountered during the flight. During this flight, the pilot of the Porter had to turn back, because the weather conditions were too bad. On his arrival, the pilot of C-FBQS was present. After some explanations, he went to eat and returned to the airfield at about 12:00 hours. He was impatient to leave.

The FIS manager asked him to cancel or extend his flight plan. After telephone contact with Swisscontrol, the air traffic control authority, the pilot received an extension of one hour. At 12:30 hours, he noticed a patch of blue sky, and this persuaded him to leave.

At 12:46 hours, the pilot, the only person onboard, took off from runway 08. At that time, according to the FIS manager, visibility varied between 6 and 8 km, and the ceiling was estimated at between 5000 and 6500 ft. The twin-engined craft made a turn to pass over the airfield again. The Saanen

FIS manager was thus able to follow him for a relatively long time in a westerly, then a south-westerly direction. The pilot's final radio message was: "Actually I'm in a good position for leaving straight ahead".

A witness at Château-d'Oex, a pilot himself, confirmed that the ceiling at this location was approximately 5500 ft MSL and that the Piper Aztec then began a sharp descent in order to remain below the cloud base, to an estimated altitude of 3500 ft MSL. This witness, who was arriving from Gruyères by road, confirmed that conditions were very bad at Montbovon (visibility approximately 1 km and a ceiling of 2500-3000 ft MSL). He did not observe the aircraft beyond the village of La Tine.

A few minutes later, the aircraft struck the mountain head-on, a few metres from the summit, very probably turning slightly right on a heading of about 150 degrees.

The pilot was killed on impact. He was not attached; his body was found outside the wreck.

1.1.3 Searches

At 14:30 hours, an employee of the Geneva Area Control Centre (ACC) telephoned Saanen airfield to indicate that he had not had any contact with the Canadian plane, first to assure himself that it had in fact left Saanen and secondly to explain that he was going to contact his French colleagues in order to obtain information about any possible contact with them.

At 18:08 hours, the ACC called back and communicated the fact that a signal from a distress beacon was transmitting in the Gsteig, Gstaad, Lauenen region. At 18:12 hours, the first search helicopter took off. Searches continued throughout the night on land.

The wreck of the aircraft was located and identified the next day at 12:45 hours.

Co-ordinates: 573.000 / 148.500 at 1800 m above sea level

National map of Switzerland No. 1245 1:25000 Châteaux d'Oex

1.2 Injuries to persons

Injuries	Crew members	Passengers	Others
Fatal	1	---	---
Serious	---	---	---
Slight or none	---	---	

1.3 Damage to the aircraft

The aircraft was destroyed on impact.

1.4 Other damage

A few small trees were torn down.

1.5 Personnel information

1.5.1 Pilot

Canadian national, date of birth 13.01.1950, resident of Toronto in Canada.

Licence:	Issued by the authority Transports Canada, Security and Safety, on 11 April 2000 and valid until 01 April 2002
Extensions:	Radiotelephony dated 31 December 1993 Night flying dated 11 April 2000 VFR OTT (Over The Top) dated 11 April 2000 Group 1 instrument flying qualification dated 11 April 2000 valid until 1 April 2002
Authorised types of aircraft:	All single-engined and multi-engined land-planes and seaplanes, other than high-performance aircraft, the minimum flying crew of which is one pilot.
Last medical examination	29 September 1999, valid 12 months. Result: without restriction

1.5.1.1 Flying experience

831 hours in total, of which 43 in the last 90 days and 419 hours in the aircraft model in question, of which 43 in the last 90 days.

Commencement of aeronautical training 2 September 1993.

1.6 Aircraft information

Type:	Piper Aztec PA-23-250
Characteristics:	Twin-engined six-seater, retractable undercarriage, low wings
Year of construction and serial number:	1976 / 27-4636
Engine:	Lycoming IO-540 port motor 1106 h starboard motor 1221 h
Propeller:	Hartzell HC-E2YR-2 Series port propeller 807 h starboard propeller 888 hours

Equipment:	2 VHF receivers, 2 NAV rec., 1 ADF, 1 Transponder, 1 DME, 1 GPS
Category of use:	Private operation, VFR day and night, IFR
Hours:	4848 hours
Mass and centre of gravity:	The mass and centre of gravity were inside the aircraft's envelope of use
Airworthiness certificate:	Issued by TC Canada on 3 May 1999
Maintenance:	Last check carried out on 10 July at 4848 hours
Endurance:	8 hours 40 minutes
Reserve in flying hours:	8 hours 25 minutes

1.7 Meteorological information

General meteorological situation

Depression at ground level and at altitude centred on northern Italy – Return from the east of a warm front (occlusion). A few flashes of lightning very locally.

- A day with no sun north of the Alps
- A very rainy morning: 10-30 mm
- Sky most often overcast, given the high humidity of the lower layers of the atmosphere a lot of low cloud.

Observations at Berne-Belp airport

- METAR

050950 050950Z 35005KT 8000 -RA FEW007 SCT012 BKN022 14/12 Q1020 NOSIG=<<...

050920 050920Z 33008KT 8000 -RA FEW005 SCT008 BKN018 14/12 Q1020 NOSIG=<<...

050850 050850Z 32008KT 7000 -RA FEW005 SCT011 BKN035 13/12 Q1020 NOSIG=<<...

050820 050820Z 34005KT 5000 RA FEW004 SCT011 OVC060 13/12 Q1020 NOSIG=<<...

050750 050750Z 31006KT 6000 RA FEW008 SCT015 OVC035 13/12 Q1019 NOSIG=<<...

At medium altitude, observations from the Chasseral:

At 2000 m: wind at 13:00 hours 340 degrees, 30-40 km/h.

1.7.1 Testimony

A witness at Château-d'Oex, a pilot himself, confirmed that the ceiling at this location was approximately 5500 ft MSL and that the Piper Aztec then began a sharp descent in order to remain below the cloud base, to an estimated altitude of 3500 ft MSL. This witness, who was arriving from Gruyères by road, confirmed that conditions were very bad at Montbovon (visibility approximately 1 km and a ceiling of 2500-3000 ft MSL). He did not observe the aircraft beyond the village of La Tine.

1.8 Aids to navigation

Not applicable.

1.9 Communications

Saanen airfield has no control tower, but only a Flight Information Service (FIS). Consequently, radiotelephone conversations are not recorded.

However, according to the deposition of the person responsible for the FIS who followed the departure of the flight in question by sight and by radio, the last call from the Canadian aircraft reported:

"Actually I'm in a good position for leaving straight ahead."

The pilot did not make contact with the Air Traffic Control centre.

1.10 Aerodrome information

Saanen airfield is a former military infrastructure which was assigned to civilian traffic after the Second World War. Located in the Bernese foothills of the Alps, it is surrounded by mountains between 2000 and 2500 metres high (see appendix x). It is not equipped with an instrument approach system or a control tower. Only the person present can give information by radio.

Equipped with an asphalt runway with a total length of 1400 metres (see appendix x), the airfield is mainly used by glider pilots and for carrying people on demand (passenger flights).

1.11 Flight recorders

Neither specified nor fitted.

The pilot had a GPS system. However, the state of this equipment means it was not possible to read its contents.

1.12 Wreckage and impact information

1.12.1 Site of the accident

The aircraft was in head-on collision with a slope of approximately 45 degrees, approximately 15 metres below the summit. The wreck then slid downwards approximately 80 metres.

This slope, which is very difficult to access, consists of rocks and a few trees.

1.12.2 Observations on the wreck

The impact was so forceful that a large part of one of the tanks was propelled over the summit and fell onto the other slope.

The degree of destruction of the aircraft and instruments was such that no data capable of interpretation could be extracted from it.

The pilot's seat remained in place. Neither the seat nor the safety belt bear any trace of tearing.

An examination of the deformations of the two propellers shows that the two engines were running at high power at the time of impact.

The undercarriage was retracted.

1.13 Medical and pathological information

An autopsy was carried out on the pilot's body at the Institut de Médecine Légale of the University of Lausanne.

Result:

quotation

(Extract from the discussion chapter of the autopsy report)

The toxicological analyses performed on biological samples taken at the time of the autopsy revealed the presence of the following substances:

- stomach contents: caffeine

- urine: indometacin (non-steroidal anti-inflammatory),

metabolite of indometacin, caffeine

Indometacin is a non-steroidal anti-inflammatory frequently prescribed as an anti-rheumatic. In the case of treatment with indometacin, particularly in the initial phase, headaches and sometimes dizziness may occur. These symptoms only rarely require the treatment to be stopped, but it is important to warn people that dizziness may occur and in this case it is advisable not to drive or undertake activities which demand particular attention.

On the basis of the information currently available to us, we are able to express the following medical/legal considerations: (there follow several considerations, including)

.....in toxicological terms, we have not found elements which might have adversely affected the ability to pilot an aircraft, with the exception of the indometacin, in so far as this substance caused (pilot's name) headaches and/or dizziness.

Conclusions

To the questions which were posed at the beginning of the report, we can respond as follows:

- 1. On the body of (pilot's name), we found multiple major traumatic lesions.*
- 2. All the traumatic lesions suffered, in particular those to the head and thorax, caused death.*
- 3. In the course of our investigations, we did not find any organic substrate which might have interfered with the ability to pilot an aircraft.*
- 4. On the basis of our investigations, we did not find traces of alcohol or drugs, but on the other hand we did note the presence of indometacin. It is possible that in certain cases indometacin may cause headaches and/or dizziness, and thus interfere, to a certain extent, with the ability to pilot an aircraft.*

End of quotation

1.14 Fire

Fire did not break out.

1.15 Survival aspects

The accident was not survivable.

2 ANALYSIS

The investigation revealed no technical defects.

At no time did the pilot indicate any damage. He made no contact with an ATC service.

According to the testimonies, the weather conditions were worse after the bend in the valley, i.e. after the village of La Tine.

Arrivals and departures at Saanen airfield in bad weather conditions require excellent knowledge of the local topography. When the sides of the mountains close to the airfield are in the clouds, the width of the airspace below the clouds becomes narrow, especially at the bend in the valley, at the village of La Tine.

Two pilots who were used to Saanen airfield and its environs strongly advised the Piper Aztec pilot not to take off. He was even advised to put off his departure until the next day.

One of the pilots tried in vain to make the airfield of Gruyères in a Pilatus Porter. He informed the Aztec pilot of the very poor weather conditions and the risks involved.

Despite all these recommendations, the pilot, for reasons unknown, wanted absolutely to make Cardiff as quickly as possible. He showed genuine impatience.

The take-off took place without any problems.

A witness at Château-d'Oex, a pilot himself, confirmed that the ceiling at this location was approximately 5500 ft MSL and that the Piper Aztec then began a sharp descent in order to remain below the cloud base, to an estimated altitude of 3500 ft MSL. This witness, who was arriving from Gruyères by road, confirmed that at Montbovon conditions were very bad (visibility approximately 1 km and a ceiling of 2500-3000 ft MSL). He did not observe the aircraft beyond the village of La Tine.

One can deduce from these testimonies that the pilot encountered a compact cloud barrier, the base of which was clearly below the peaks. He then decided to make a 360° right turn, enabling him either to gain sufficient altitude to fly over the summits safely or to turn back to Saanen airfield. With a ceiling between 2500 – 3000 ft MSL at Montbovon, the width of the valley available to make a turn back is less than 1000 metres and at the narrowest point of the valley is close to 500 metres! Furthermore, again according to the testimonies, the aircraft was in a steeply descending trajectory, and therefore probably at high speed.

As far as the influence of the indometacin on the pilot's behaviour, or even his judgement, we are reduced to conjecture, since the secondary effects of this medicine vary depending on the individual.

3 CONCLUSIONS

3.1 Findings

- The pilot held a valid pilot's licence.
- The aircraft, a Piper Aztec, year of construction and serial number 1971-27-4636, possessed a valid registration certificate.
- The autopsy revealed that the pilot was not under the influence of alcohol or drugs but did reveal the presence of indometacin.
- The aircraft was refuelled on 4 August 2000, with the addition of 464 litres.
- Examination of the deformations of the two propellers shows that the two engines were running at the time of impact.
- The undercarriage was retracted.
- The pilot was not attached at the time of impact.
- The flight tracking data from the GPS Garmin 195 used during the flight could not be retrieved.

- All the instruments were completely destroyed and were incapable of providing any data which could be interpreted.

3.2 Causes

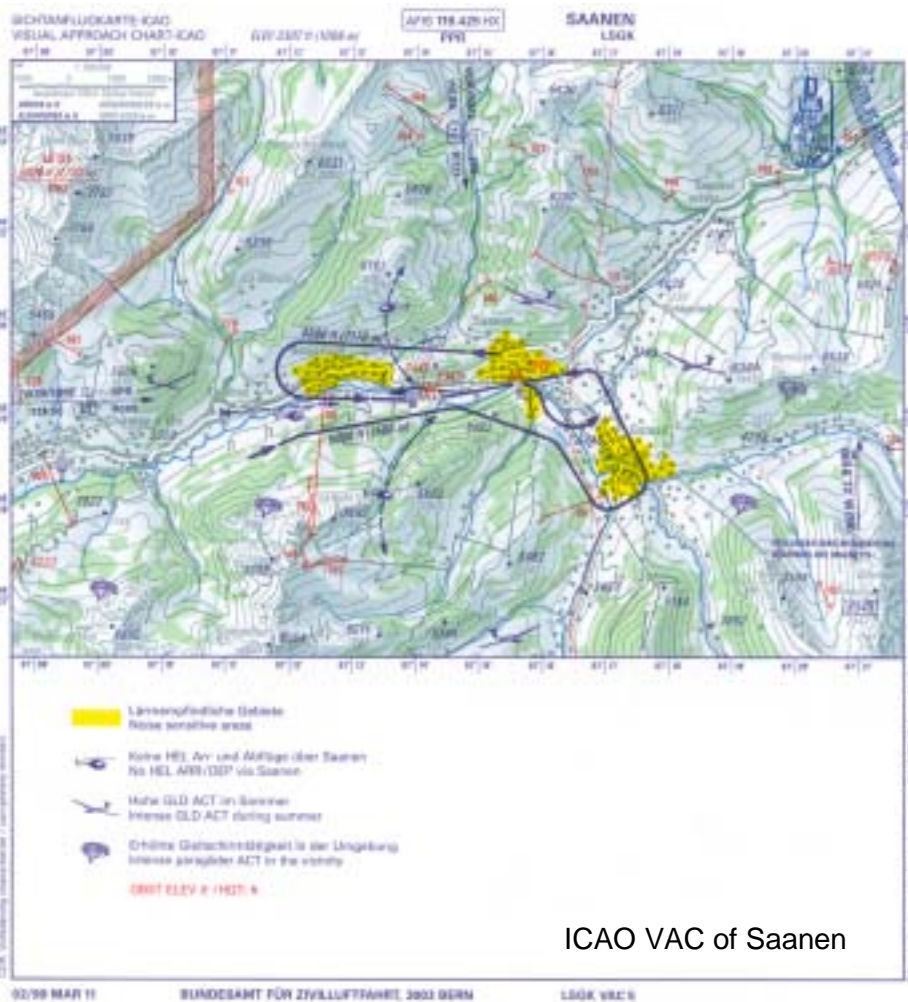
The accident is due to the fact that the pilot undertook a visual flight under instrument flight weather conditions and the aircraft then struck a mountain.

Berne, 1st July 2002

Aircraft Accident Investigation Bureau



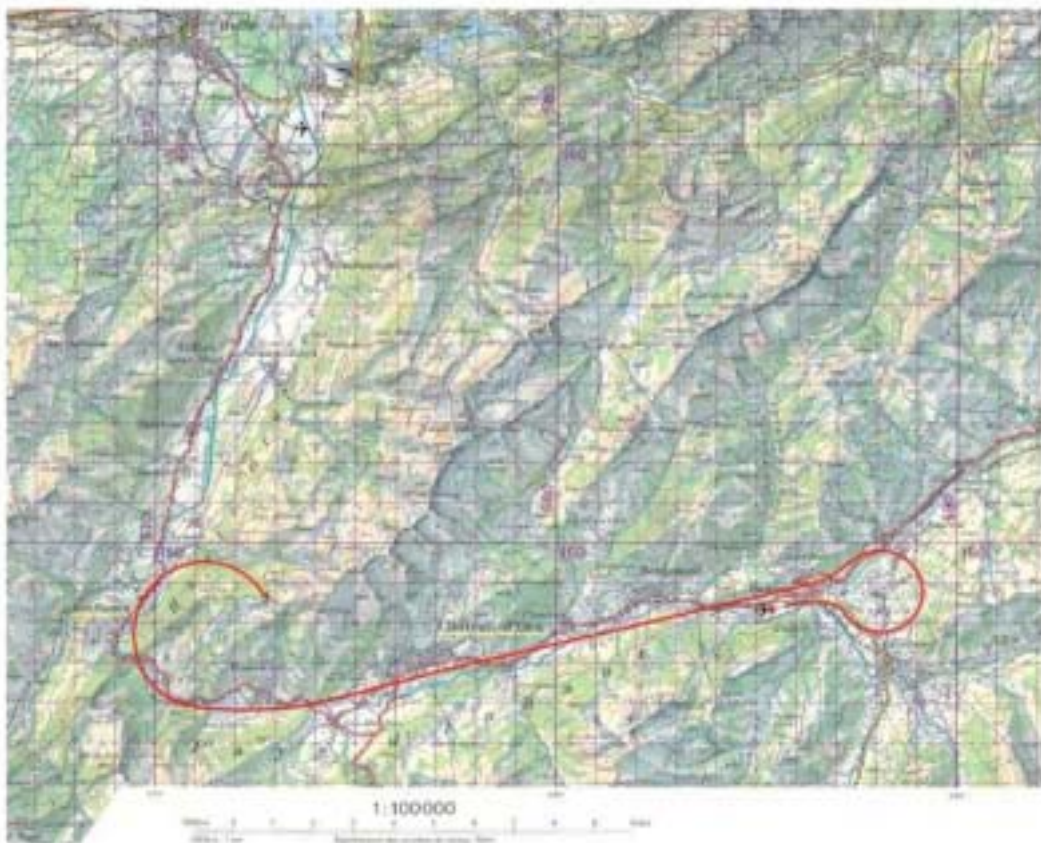
Excerpt from ICAO chart 1:500'000



ICAO VAC of Saanen



Place of impact



Presumed flightpath of C-FBQS