Transportation Safety Board of Canada

Bureau de la sécurité des transports du Canada

AVIATION OCCURRENCE REPORT

COLLISION WITH OBJECT

ALL WEST AIR SERVICES LTD.
PIPER PA-34-200 SENECA 1 C-GRFE
GRANDE PRAIRIE, ALBERTA
14 MARCH 1998

REPORT NUMBER A98W0043

Canada

Aviation Occurrence Report

Collision with Object

All West Air Services Ltd.
Piper PA-34-200 Seneca 1 C-GRFE
Grande Prairie, Alberta
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Summary

The pilot of the Piper Seneca 1, C-GRFE, serial number 347350249, departed Calgary, Alberta, on an instrument flight rules (IFR) flight to Grande Prairie, Alberta, at 0755 mountain standard time (MST)[1]. The pilot had rented the aircraft for a private flight to transport four passengers to Grande Prairie for the weekend. The flight to Grande Prairie was carried out at 8 000 feet above sea level (asl) and a clearance for an instrument landing system (ILS) approach to runway 29 was issued and acknowledged by the pilot as the aircraft neared destination. The weather at the time was 200-foot ceiling with a reported visibility of ⅛ of a statute mile (sm) in fog. While on approach, the aircraft descended, struck a lamp standard adjacent to a highway, entered a steep left turn, and struck the ground. The aircraft cartwheeled onto its nose and came to rest upright, facing in the opposite direction. The five occupants were fatally injured. The accident occurred at 1033.

Ce rapport est égalemet disponible en français.

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[1] All times are MST (Coordinated Universal Time minus seven hours) unless otherwise noted.

Other Factual Information

The pilot commenced flying training in 1995 attaining his private pilot licence (PPL) in December of that year. He then continued his training and obtained a commercial pilot licence, and by 30 November 1997, had obtained endorsements for multi-engine rating, instrument rating, and class-four instructor rating. He had accumulated a total of 428 hours on single and 60 hours on multi-engine aircraft. The pilot's logbook indicates that the multi-engine flying was all done on the Piper Seneca aircraft. During his training for the commercial licence and the instrument rating, the pilot logged 46 hours of under-the-hood instrument time and 2.3 hours of actual instrument time. At the time of the accident, the pilot's medical had not been renewed to maintain the commercial pilot licence. Private pilot privileges of the commercial pilot licence extend six months beyond the expiry date on the licence in this case. He had not flown an approach in instrument meteorological conditions (IMC) before the occurrence flight.

Arrangements for the rental of the aircraft had been made by the pilot earlier in the week. The Seneca was to be fuelled and ready for an early departure on the morning of 14 March. At 0534 the pilot called the flight service station (FSS) at Springbank, Alberta for a weather briefing and to file an IFR flight plan. The FSS specialist provided a general synopsis, the current weather for Calgary, Red Deer, Whitecourt and Grande Prairie, pilot reports of icing, as well as forecast icing in cloud and the winds. Calgary was reporting a ceiling of 700 feet overcast with visibility of 8 to 10 sm. Red Deer was 2 500 feet overcast with a visibility of 15 sm in snow. Whitecourt was 1 400 feet scattered, 2 000 feet overcast with a visibility of 4 sm in light snow, and Grande Prairie had a special report at 0523 with 400 feet overcast and 2 sm in fog. Grande Prairie was expected to improve later in the afternoon. The terminal forecast for Grande Prairie did not show the deteriorating conditions until amendments were issued. The pilot did not receive the terminal forecast. The ceiling and visibility did start to lower at 0523, and continued to decrease until 1320 when conditions began to improve. The pilot called to revise his departure time at about 0705, but he did not ask for or receive the updated weather. The report at 0600 was wind calm, ¾ sm visibility in mist, vertical visibility 200 feet, temperature minus 7 degrees Celsius, and dew point minus 9 degrees Celsius. At 0700 the visibility had decreased to ¼ sm in freezing fog, and the vertical visibility was 100 feet.

At 0748 the pilot called for his IFR clearance followed by taxi instructions and then take-off clearance from Calgary. The flight departed at 0755. Communications with air traffic controllers on the en route portion of the flight appeared to be normal except for some radio transmissions that had to be repeated. The clearance for the approach to Grande Prairie was acknowledged by the pilot and he confirmed that he had the automatic terminal information system (ATIS) report for Grande Prairie. When asked what his intentions were in the event of a missed approach, the pilot indicated that he would climb to 4 300 feet asl and return to the "QU" beacon, the procedure as described in the Canada Air Pilot approach sheet for Grande Prairie. Inbound to the airport, when asked by the FSS specialist if he had ATIS, the pilot replied that he had information "D". At the time, the weather portion of ATIS information "D" stated:

Grande Prairie Airport information D weather at 1700, wind calm, visibility ⅛ fog, vertical visibility 200 feet, temperature minus 6, dew point minus 8, altimeter 29.98

The pilot reported by the beacon on the glide path to Grande Prairie FSS, and the next transmission was a MAYDAY call followed, five seconds later, by an emergency locator transmitter (ELT) transmission.

At 0828 and 0905, two other aircraft had flown the ILS approach to runway 29, but had to carry out missed approaches and fly to their selected alternate airports. The crew reported that they had entered cloud at about 900 feet above ground level (agl), and that they did not see the ground from the decision height of 200 feet agl. This information was not relayed to the occurrence pilot.

A pilot flying an ILS approach in instrument conditions refers to aircraft instruments to maintain the aircraft on the centre line of the runway, and on the glide path to the height where a decision must be made to continue the approach or conduct a missed approach procedure. The ILS equipment picks up radio signals from ground based localizer and glide path transmitters. These signals are depicted on the cockpit instrument by vertical and horizontal needles, and if the pilot flies the aircraft to keep the needles centred, the aircraft will descend on a three-degree glide slope on the runway centre line. Radar data show that from the Grande Prairie beacon, the outer marker for the ILS approach to runway 29 located three nm from the runway, the pilot was not accurately tracking the localizer for the duration of the inbound flight. Turns to the left and right during the descent show that the localizer needle would not be centred. The rate of descent appeared to be normal for the speed of the aircraft.

Examination of the wreckage trail and the aircraft showed that the left side of the left engine struck a lamp standard at a height of about 18 feet agl. The lamp standard was located on the south side of a divided, double-lane highway, about 1 200 feet from the end of the runway and 1 400 feet left of the runway extended centre line. The aircraft entered a steep left turn, and the left wing struck the ground in about a 90-degree roll attitude. The aircraft then cartwheeled onto the nose and came to rest heading in the opposite direction of travel. The nose section was crushed to the instrument panel, the aft fuselage had buckled behind the cabin bulkhead, and the empennage had displaced upwards and forward at impact. The fuel tanks had ruptured and were crushed. The undercarriage and flaps appeared to be in the retracted position. Damage to the fuselage and the deceleration forces of the impact made this a non-survivable accident.

The Piper Seneca was operated by All West Air Services Ltd. as a training platform for multi-engine and instrument training, and for charter flights. Records indicate that the aircraft was certified, equipped, and maintained in accordance with existing regulations and approved procedures. The was no evidence of deferred deficiencies relevant to the circumstances of the occurrence in the maintenance logbooks. The aircraft weight and centre of gravity were within the normal range. The aircraft was not equipped or certified for flight into known icing conditions.

All West Air Services Ltd. has a set of guidelines and regulations for the flight training program. Section 2, which deals with weather limitations, states that for flights on an instrument flight plan, dual or solo, the pilot in command must be IFR rated and:

1. *Take-off 1 sm or greater for day and 2 sm or more for night*
2. *Cruise - no flights are to be operated into known and forecasted icing conditions*
3. *APP and landing - as per VFR*
4. *Alternate weather - as per VFR*

Prior to departure from Calgary, the chief flying instructor asked the pilot about the Grande Prairie weather, and the pilot's reply indicated that the weather was acceptable. There was no other reported discussion about the flight. The guidelines and regulations could not be found in the pilot's personal flying material.

Analysis

Although the terminal forecast did not indicate that the ceiling and visibility at Grande Prairie would decrease to 100 feet and ⅛ of a mile, conditions were IFR and below landing limits for the morning. Prior to the departure from Calgary, the ceiling was down to 200 feet and the visibility was ¼ of a mile. The pilot did not request an update of the current weather during the flight north. Both the air traffic controller and the FSS specialist asked the pilot if he had the ATIS before he commenced the approach, and the controller confirmed what the pilot intended to do in the event of a missed approach. The responses would indicate that the pilot had the weather, and that the missed approach would be as described on the approach plate for runway 29.

The fact that two aircraft had made approaches earlier and both had to overshoot and proceed to alternate airports was not relayed to the occurrence pilot. There is no requirement to pass on this type of information. The pilot had not asked for the weather when he revised the departure time, therefore, he was not aware that conditions had deteriorated. On the flight north, a weather update could have been obtained from the controller or the FSS specialist. In light of the weather conditions that existed and the forecast that was provided, experienced pilots would normally ask for an update at every opportunity to help them in making decisions. It could not be determined why the pilot did not take advantage of the services available.

The information provided the pilot when he called FSS indicated that the visibility at Grande Prairie was 2 miles and the ceiling 400 feet overcast, with conditions to improve by the afternoon. The pilot did indicate a concern about icing conditions in cloud that had been reported in the Calgary area. Snow was reported at Red Deer and Whitecourt, but at 8 000 feet asl, the forecast cloud tops suggested that the flight north would be between layers. Based on guidelines issued by the company, the flight should not have departed Calgary until later in the day.

Entries in the pilot's logbook indicate that the approach to Grande Prairie was his first approach in IMC. The aircraft likely entered cloud at about 900 feet agl, just inside the outer marker for the approach to runway 29. The radar data show the aircraft turning left and right during the descent, as the pilot attempted to follow the localizer for the runway centre line. The rate of

descent appears to be constant. The aircraft continued to descend, through the decision height of 200 feet agl,until it struck the lamp standard. It could not be determined why the pilot continued his descent below decision height, or why he carried out the approach in the weather conditions that existed.

After striking the lamp standard, the aircraft entered a steep left turn due to the drag on the left side as a result of the lamp standard contacting the left engine and the thrust produced by the right engine. The phase of flight was not clearly determined, although indications are that the undercarriage was up, and the sudden left turn suggests that there was ample power being developed by the right engine; it is likely that just prior to striking the lamp standard, the pilot was initiating an overshoot.

The MAYDAY call transmitted by the pilot, about five seconds before the ELT was heard, is believed to have been sent after the aircraft struck the lamp standard.

Findings

1. The pilot was certified and qualified for the flight in accordance with existing regulations.

2. The weather at Grande Prairie was below the published minima for the ILS approach to runway 29.

3. This was the pilot's first approach in instrument meteorological conditions.

4. The pilot did not arrest the descent when the aircraft reached the decision height of 200 feet agl.

5. The aircraft struck a lamp standard at about 18 feet agl.

6. Control of the aircraft was lost after the collision with the lamp standard.

7. The pilot was likely attempting to overshoot before contact was made with the lamp standard.

Causes and Contributing Factors

The aircraft crashed as a result of the pilot descending below the decision height for the ILS approach to runway 29 and colliding with a lamp standard. The reason the pilot carried out the approach in the weather conditions that existed or why he continued descent below 200 feet agl could not be determined.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 03 February 1999.