

Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

**AVIATION INVESTIGATION REPORT
A07O0233**



LOSS OF CONTROL AND IMPACT WITH RUNWAY

**SOSA GLIDING CLUB
PEZETEL SZD-51-1 JUNIOR (GLIDER) C-FICQ
ROCKTON, ONTARIO
18 AUGUST 2007**

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

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Pezetel SZD-51-1 Junior (Glider) C-FICQ

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Summary

The single-seat Pezetel SZD-51-1 Junior glider (registration C-FICQ, serial number B-2150) was on a routine local flight from the Rockton Airport with a student pilot on board. The flight was scheduled to last approximately one hour. At the end of the hour, the duty instructor at the club attempted to contact the pilot via radio but there was no response. Shortly thereafter, the glider was seen entering the circuit and was observed on final approach to Runway 18/36. As it flew over the road near the end of the runway, the air brakes were partially deployed and then retracted. As it continued over the runway at a height of approximately 25 feet above ground level, the air brakes were fully deployed and the glider pitched nose-down approximately 45° and struck the ground. The cockpit was substantially damaged by the ground impact and the student pilot sustained fatal injuries.

Ce rapport est également disponible en français.

Other Factual Information

The student pilot held a valid student pilot permit and was qualified for the flight. The student pilot was a regular club member and had previously flown a total of 80 flights, including five solo flights on club gliders; however, this was the pilot's first flight on a Pezetel SZD-51-1. The Pezetel SZD-51-1 glider was considered a slightly higher performance glider in comparison to the other gliders the pilot had flown. The SZD-51-1 is considered by several soaring clubs to be an appropriate transition glider from the heavier dual-seat trainers.

There was no evidence that incapacitation, physiological, or psychological factors affected the pilot's performance.

The weather reported at the time of the occurrence was scattered clouds, light north-northwest winds and a temperature of 22°C.

Runway 18/36 is grass-covered and is 2600 feet long and 200 feet wide. The threshold is displaced 250 feet. At the end of the runway, there is a tall grass area and just beyond that, tall trees. The airfield is operated by the SOSA Gliding Club and it is mainly used by its members for glider operations.

The glider was manufactured in Poland in 1996 and imported into Canada in 2006. It had a valid certificate of airworthiness and was maintained in accordance with the current regulations and standards.

Before the first flight of the day, a duty instructor performed a daily pre-flight inspection of the glider and signed the record book indicating that the inspection was completed. The glider had flown at least one flight during the day and no discrepancies had been reported by that pilot.

The seatback is adjustable to three different settings, but the seat pan is fixed in position and is not adjustable. For the occurrence flight, the seatback was adjusted forward to accommodate the pilot's stature. With the seatback adjusted forward, the pilot is closer to the primary flight controls but slightly forward of the air brake lever on the left side of the cockpit. With the seat in this position, full air brake deployment is more awkward, but can be achieved without the pilot repositioning himself or herself in the seat. The pilot was wearing a seatbelt/shoulder harness combination as per club policy. There was no indication that the seat position had moved during flight.

Radio communication is available between the instructor, stationed on the ground with a hand-held radio, and the student flying. The gliders are equipped with panel-mounted radios. Monitoring of all student solo flights is standard practice at the SOSA Gliding Club. On the occurrence flight, the instructor tried to establish contact with the pilot but was unsuccessful. Any concerns the instructor may have had regarding the flight or the lack of radio communication were dispelled when he observed the glider enter the circuit.

The flight appeared normal as the pilot joined the downwind and base legs. On the final approach, the glider was at an estimated height of 300 feet above ground level (agl). Air brakes were expected to be deployed at this point on the approach but no deployment was observed.

The glider then pitched nose-down in a steep attitude towards the field and air brakes were partially extended but quickly retracted. A series of pitch oscillations was observed before the aircraft stabilized in a level attitude. As it continued over the runway, it descended to 25 feet agl. Ground speed at this time was estimated to be between 60 and 65 knots. Recommended approach airspeed is 50 knots. At the mid-point of the runway, the air brakes were again fully extended, followed by the glider pitching nose down to a 45° angle. The glider remained in this attitude until it struck the ground.

The elevator, rudder, and aileron control systems were examined. All flight control damage was determined to be the result of the impact and there was no indication that any of the controls had been jammed. The air brakes were also examined and no abnormalities were found with the system. The pitch trim control linkage located in the cockpit was removed and visually examined using a dioptre lens magnifier. Scrape marks on the pitch trim track indicated that the trim was located between the third and fourth notch. This position was within the expected range for the weight and centre of gravity for this flight. Adjusting the pitch trim forward (nose-down trim) lessens the amount of control stick travel required to reach the forward mechanical stop which equates to full nose-down input.

The flight controls on the glider were of a conventional arrangement and operation. The air brakes can be operated throughout the allowable airspeed range and assist in controlling the flight path angle on approach. The air brake lever is located to the left of the pilot's seat. It is a slide bar with a handle grip which also incorporates a landing gear brake lever. To deploy the air brakes, the pilot grips the handle, rotates it slightly to unlock it, and pulls it back along the slide bar. Air brake extension is not proportional to the amount of travel by the slide bar. Use of air brakes is not normally associated with changes in aircraft pitch.

The instructor's hand-held radio and the glider battery which supplies power to the panel radio were checked after the accident and were determined to be serviceable. The batteries were found to have a sufficient charge to provide radio communications.

An experienced SOSA Gliding Club glider pilot/instructor flew the sister ship glider a few days after the occurrence and advised the TSB that a safe landing was possible from an altitude of 300 feet agl if the air brakes had remained deployed. Air brake deployment results in an increased sink rate. The weather conditions were similar but not identical; the wind was reported to be from the south at five knots rather than from the north. Moving the cockpit seatback to the fully forward position did not interfere or hamper air brake lever operation.

Analysis

The pilot had been trained on and flown in other glider types owned by the SOSA Gliding Club. Most of the flying experience was in dual-seat trainers, which were flown both with an instructor and solo. Solo flights are monitored by an instructor on the ground via radio communication. For undetermined reasons, the instructor was not able to establish radio contact with the pilot at the expected return time.

The examination of the glider revealed no pre-impact mechanical failures. The weather was not a factor and the pilot had been trained to perform the solo flight. Unusual flight behaviour was first observed during the final approach to the runway. At the altitude the glider started the final approach, the air brakes would normally be extended to reduce altitude. No air brake deployment was observed. As a consequence, the aircraft speed and altitude was high for this stage of the approach. The first aircraft pitch-down was coincident with the air brake deployment.

The significant pitch-down attitude that followed suggests that the pilot was aware that the glider was high on the approach and was attempting to lose altitude for a successful approach and landing. The ensuing pitch oscillations were a result of overcorrecting by excessive stick inputs to try and arrest the rapid descent. Although the pilot stabilized the oscillations, the glider remained high and due to the steep descent, it gained airspeed.

The pilot may have been hesitant to apply air brakes to correct the situation because of the previous pitch control issues. Consequently, the glider was now in a long-landing situation. As the landing distance available decreased, the pilot needed to deploy the air brakes in order to land on the remaining runway. Sensing the urgency to land the glider, the pilot may have applied forward stick coincident with air brake deployment. The final pitch-down into the runway may have been a result of these two actions.

Findings as to Causes and Contributing Factors

1. The pilot may not have been familiar with the flight characteristics of the glider because this was the first flight on type. The glider was flown high and fast on approach.
2. The resultant long-landing situation may have caused the pilot to utilize air brakes and forward stick input to land the glider on the remaining runway. The final pitch-down into the runway may have been a result of these two actions.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 25 April 2008.

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