



**Hang Gliding and Paragliding Association of Canada /
Association Canadienne de Vol Libre**

FLIGHT SAFETY INVESTIGATION REPORT 2023-002

APRIL 27, 2023

LUSKVILLE, QC, CANADA

FOREWORD

This report contains a summary of the events and findings related to a fatal accident involving a Canadian pilot which took place in Luskville, Quebec, on 27 April 2023. The report was made possible thanks to two pilots who witnessed the accident, interacted with the pilot on the day of the accident, or participated in the rescue efforts, as well as several experts who were consulted for their specific knowledge. It is with great sadness for the loss of a treasured member of our paragliding community and our deepest condolences to those closest to him that this information is shared. The HPAC Safety Committee is dedicated to foster a community of safety for the sport and would like to thank every person who contributed to this report, thereby allowing us to share a careful reflection about this event. The report does not apportion legal liability for any claims that may result from this accident.

INCIDENT PARAMETERS

Aircraft Type:	<i>Paraglider:</i> Phi Maestro 2 Light (EN B), 2022 <i>Harness:</i> Advance Lightness 3, 2023
Date, time of Incident:	27 April 2023, approximately 2.15 p.m. local time
Location of Incident:	Luskville, Qc, Canada, https://maps.app.goo.gl/egHbwakzxcN93M94A
Type of Flight:	Recreational Local Flight
Persons Involved:	A 61-year-old male pilot (hereafter the "pilot")
Injuries:	Life-threatening injuries resulting in loss of life
Equipment Damage:	Some damage to helmet and harness resulting from impact
Pilot's Rating / License:	P2
Pilot's Experience	115 hours, 294 flights as of 14 June 2022

EXECUTIVE SUMMARY

On 27 April 2023, a 61-year-old male paragliding pilot attempted a local flight in soaring and thermal conditions at Luskville, Qc, Canada. At approximately 2:15 p.m., while flying above a ridge, the pilot's paraglider very likely had a large, asymmetric collapse which led to a rapid loss of altitude. The pilot failed to control the loss of heading or throw his reserve and impacted the ground at high velocity, which resulted in life-threatening injuries, and later death. The factors leading to the collapse and the loss of altitude remain uncertain. It is possible that the combined effect of the wind, thermal activity, and terrain created turbulences that led to the collapse. It is also possible that some alterations to the wing made by the pilot, specifically one or several knots on the upper cascade of the lines, could have contributed to the accident.

INFORMATION SOURCES

This report is based on testimony and observation gathered from the following sources:

- **Local Pilot 1 (LP1)** – Local pilot who flew earlier the same day.
- **Local Pilot 2 (LP2)** – Local pilot who was walking up to take-off at the time of accident.
- **Flight Log** – The pilot’s flight log, recovered from his variometer, was analyzed by the Safety Committee in consultation with an expert.
- **Pilot’s Equipment** – Upon release by the police, the pilot’s equipment was inspected by a paragliding workshop and analyzed by the Safety Committee in consultation with two experts.

UNKOWN INFORMATION

Some information was sought out but could ultimately not be obtained prior to the writing of this report. The investigating committee was unable to gather the following:

- **Police Report** – The investigating committee has requested a copy of the police report. The police report has not been made available at the time of this report.

INCIDENT TIMELINE

All times indicated are approximate.

Pre-Flight	<i>While the pilot is getting ready to fly, he notices that a line in the upper cascade of his paraglider is torn and decides to repair it with a knot.</i>
1:51 p.m.	<i>The pilot takes off for a recreational, local flight in combined thermal and ridge soaring conditions.</i>
2:11 p.m.	<i>While flying close to the ridge, approximately 70 meters above ground, the pilot initiates a left turn away from the ground. Because of a collapse or a critical situation caused by two repaired lines ripping in flight, and instead of flying away from the ridge, the pilot’s glider continues its left turn for another 90 degrees before appearing to fly relatively straight towards the ridge.</i>
2:11 p.m.	<i>Only a few seconds after the last left turn, the pilot impacts the ground and sustains life-threatening injuries.</i>
Post-accident	<i>The pilot is airlifted to the hospital following a courageous rescue operation.</i>

LOCAL CONDITIONS

The investigation committee was unable to collect exact weather information for the day of the accident. Witness LP2, who was walking up to take-off at that time of the accident reports speaking with the pilot over radio and remembers the pilot mentioning light turbulence. Another witness, LP1, took off at 1:27 p.m. and flew for 35 minutes before the accident. LP1 recalls conditions to have been good. The analysis of the pilot’s track log indicates both ridge and thermal lifts with a NW wind around 15 km/h SE, and thermals ascension averaging 1 m/s over the whole flight, but of up to 5 m/s at times. These conditions, combined with a hilltop about 450 m away from the crash site, would be sufficient to create turbulences that could cause a paraglider to collapse.

THE PILOT

The pilot was 61-year-old, HPAC P2 certified pilot. According to witness LP1, the pilot had started flying in 2018. The pilot was working towards his P3 rating but had not yet completed his Transport Canada Air Regulations exam (HAGAR). On his P3 rating registration form, dated 14 June 2022, the pilot indicated that he had logged 115 hours of flight time over 294 flights. The rating registration form includes the endorsements “Thermal Soaring” and “Coastal/Ridge flying”. The endorsement “SIV” is not included in the form. However, LP1 recalls having participated in a 4-day SIV clinic along with the pilot in the Spring of 2022.

THE WING AND EQUIPMENT

All the equipment was manipulated over the course of the rescue efforts and was held by the police for several months after the accident. It was subsequently sent to a paragliding workshop for analysis.

Both witnesses recall that the helmet had considerable visible damage on the right side. Multiple straps of the harness as well as some lines of the glider appear to have been cut during rescue. Additionally, the harness appears to have been significantly damaged during and after the impact. Witness LP1, who assisted with rescue efforts, recalls that the reserve pins were still secured on the harness, and the reserve had not been deployed. As the first responders were preparing to lift the pilot up the ridge, one of the responders grabbed onto the reserve handle and pulled out the reserve. To facilitate rescue efforts, the reserve was then detached and removed from the harness.

Several lines on both sides of the wing were damaged (see, Figure 1: Damage to right side & Figure 2: Damage to left side). Likely, the damaged lines on the left side were torn after the accident or cut during rescue operations. On the right side of the wing, two lines in the upper line cascades show signs of repair that were done before the flight. Those two lines are 2B5 Right and 3C3 Right. Line 2B5 was repaired and covered with a heat shrink tube (see, Figure 4: Line 2B5 right). When the line was inspected at the workshop, the knot had either come undone or the line had ripped. Line 3C3 appeared to have been repaired with an extra piece of line and an intricate knot (see, Figure 3: Line 3C3 right). The line was torn just above the knot when the wing arrived at the workshop for inspection. Anecdotally, LP1 recalls that the pilot had radioed him prior to his flight and indicated that he had needed to repair one of his lines with a knot.

INCIDENT INVESTIGATION

The pilot’s track log begins on 27 April 2023 at 1:51:08 p.m. local time. The track ends shortly after 2:11:52 p.m. local time with what appears to be an impact to the ground. After take-off and for the first 5 minutes of the flight, the pilot flew in figure eights just in front of the take-off area, at an altitude of about 370 meters or roughly 70 meters above ground. This suggests the presence of ridge lift caused by sustained wind or, more likely, a combination of sustained SE wind and thermal updraft. The pilot then entered a small thermal and climbed approximately 130 meters, averaging +1.8 m/s over the duration of the climb. This allowed the pilot to leave the take-off area and enter a second thermal to the East about 5 minutes later. There, the pilot reached the maximal altitude of the flight at 591 meters, after climbing in a thermal averaging +1.6 m/s over the duration of the climb, with a NW drift.

At approximately 2:07 p.m., the pilot left the second thermal and flew Eastwards, then Westwards back to the take-off area. After two figure eight turns, the pilot entered what appears to be a third figure eight turn at 2:11:30 p.m., at an altitude of 333 meters or about 70 meters above ground. Instead of flying away from the ridge after a 180-degree turn, the track log indicates that, at 2:11:38 p.m., the pilot continued his turn for another 90 degrees. The track log subsequently shows an almost straight flight path North towards the ridge for another 10 to 14 seconds, covering a horizontal distance of 53 meters, with a loss of altitude at an average rate of -3.2 m/s over 14 seconds (see, *Figure 5: Flight path before the accident*). Between 2:11:42 p.m. and 2:11:48 p.m., the altitude decreased from 329 meters to 296 meters while flying towards higher ground, suggesting a descent rate of -5.8 m/s averaged over 6 seconds.

Based on the track log, the pilot must have impacted the ground at an altitude of 288 meters between 2:11:49 p.m. and 2:11:52 p.m. Witness LP2 who was hiking up to take-off at the time of impact, recalls hearing a scream and, as he looked up, seeing the pilot in what appeared to him as an autorotation configuration, turning left, roughly at the level of take-off. LP2 only saw one turn before hearing the impact against what he believes was a rock wall. LP2 does not report hearing or seeing an asymmetric collapse, generally seen as the incident leading to an autorotation in paragliding¹.

An abrupt loss of altitude is consistent with the track log, which shows a rapidly increasing altitude loss over the last 14 seconds of the flight. In high rotation scenarios such as an autorotation, the GPS typically no longer records a spiral but will show a nearly vertical descent with some latitudinal and longitudinal noise. In this case however, after the sink rate started to increase and over the last 14 seconds of the flight, the track log shows that the pilot covered more than 50 meters in horizontal distance.

It is also possible that the two lines in the upper cascade on the right side that showed signs of repair ripped during the flight. The experts consulted for the report agree that this would cause a critically dangerous situation, without necessarily making the glider uncontrollable. Pressure on the A lines on the right side would increase, causing a turn to the left, possibly followed by a collapse on the right side.

Overall, the evidence remains inconclusive as to the exact configuration of the glider over the last 10 to 15 seconds of the flight.

SITE OF IMPACT AND INJURIES

The site of impact is a steep, small rock face surrounded by trees (see, *Figure 6: Site of the accident*). Witness LP2 reports being the first one on scene and immediately realizing the seriousness of the accident. He recalls the victim behind unconscious, with laborious breathing and an open fracture on the right arm. Witness LP2 remembers calling 911 and waiting about 60 to 70 minutes before the arrival of first responders. Witness LP2 and witness LP1 recall that the rescue operation was complicated and lasted more than 4 hours. The injured pilot was airlifted to the hospital. As a result of the accident, the pilot suffered multiple life-threatening injuries and unfortunately passed away a few days later.

RECOMMENDATIONS

It is not possible to ascertain whether the impact was caused by a collapse followed by a loss of heading or an autorotation, or whether it was the result of two improperly repaired lines ripping in flight. It is also possible that the lines were torn following a collapse, worsening an already critical situation. Considering this accident, the HPAC Safety Committee makes the following recommendations:

1. **Do not hesitate to throw your reserve** – In a critical situation, a pilot should always choose the least aggravating solution. It is possible that pulling big ears would have stabilized the glider if some of the lines had ripped during flight. However, throwing the reserve without hesitation almost always results in a safe landing.
2. **If you have any doubt about your glider, do not take off** – Pilots often underestimate the risks or overestimate the quality of their repairs. Make sure that you have access to a trusted paragliding repair shop and do not attempt to repair lines yourself. Any knot is likely to decrease the length of the line below its tolerance (typically 1cm) and reduce its resistance.
3. **Increase your margins while flying close to terrain** – Flying close to terrain increases risk by decreasing the time available to correct an event such as a collapse, a spin, or an equipment failure. The combined effect of wind, thermal updraft and terrain can create conditions in which a paraglider can collapse. As a rule of thumb, the stronger the conditions, the greater the safe distance from terrain should be.

¹ See, e.g., <https://www.annecy-parapente.fr/en/blog/how-to-get-out-of-an-autorotation-in-a-paraglider>.

CONDOLENCES & CLOSURE

We are deeply saddened by the passing of our friend and fellow pilot and would like to present our condolences to his family. The small community around the pilot, and the larger pilot community in Quebec and Canada lost a wonderful person, who will be truly missed.

Witness LP2 who was first on scene, and two residents provided nothing short of heroic support. Witness LP2 was quick to react and immediately called for help. One resident held the pilot's head during the entire rescue effort, while the second ferried first aid supplies to the scene. The first responders and rescuers were relentless in their efforts to rescue the pilot and attempt to save his life. More than a dozen people were involved in this challenging rescue operation. We are very grateful to have such dedicated people around us. We thank them for their help and share their sadness about the passing of our friend.

Thank you, Merci




The HPAC Safety Committee

Bertrand Stoffel

APPENDICES

2023-04 Luksville - Line Damage Left Side

19

-  torn line with signs of repair
-  out line
-  torn line with loose knot

Leineplan

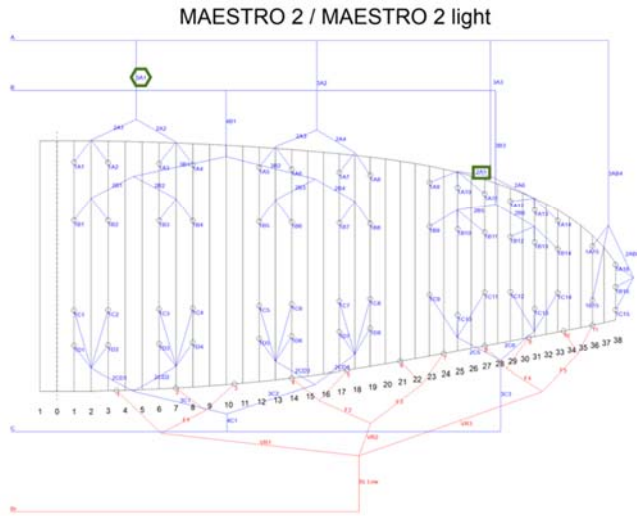


Figure 2: Damage to left side

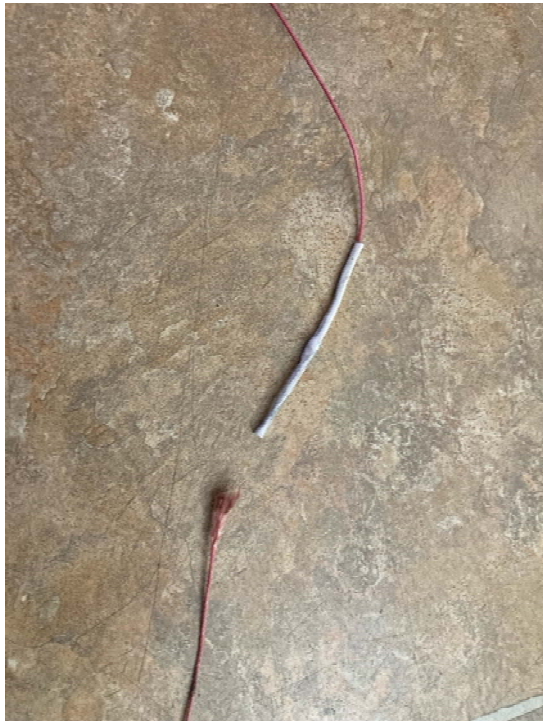



Figure 4: Line 2B5 right

2023-04 Luksville - Line Damage Right Side

19

-  torn line with signs of repair

Leineplan

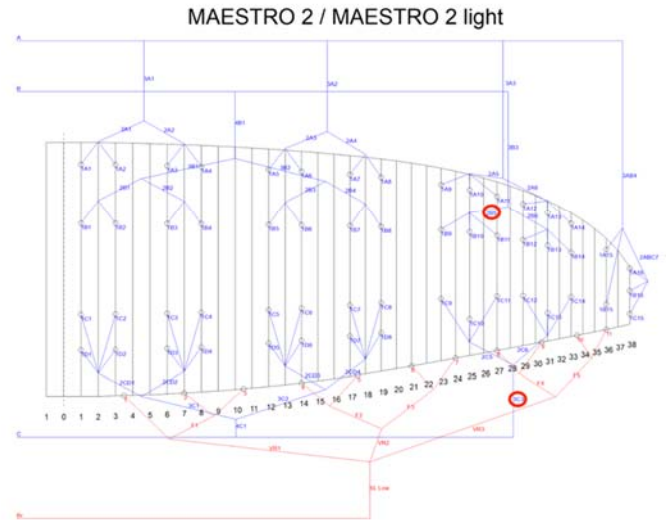


Figure 1: Damage to right side

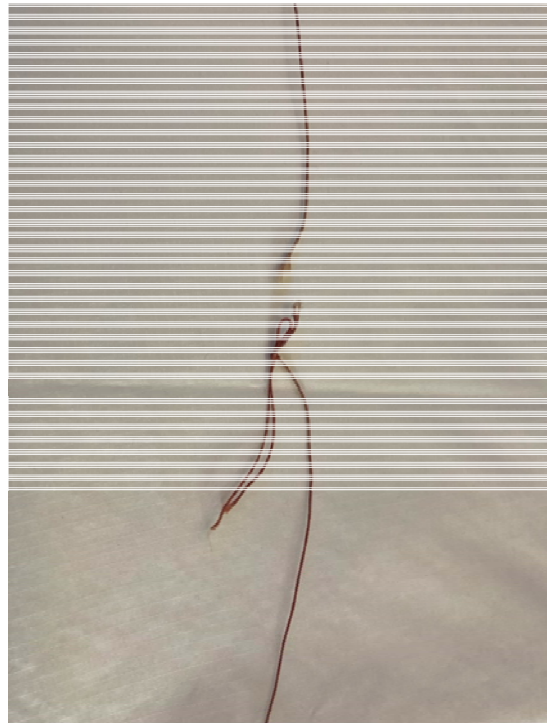


Figure 3: Line 3C3 right

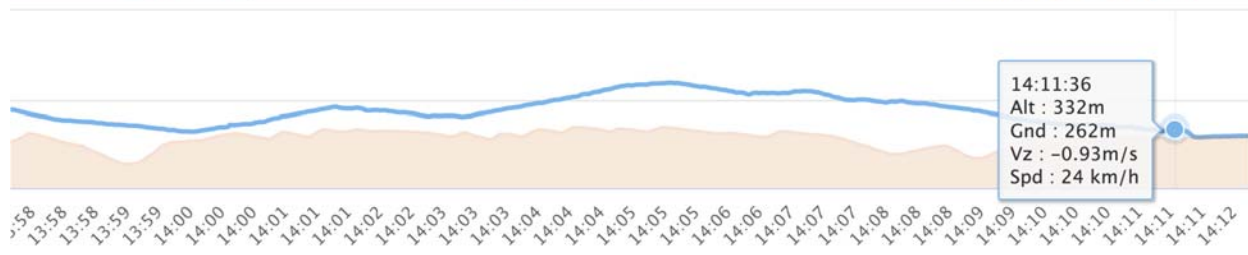
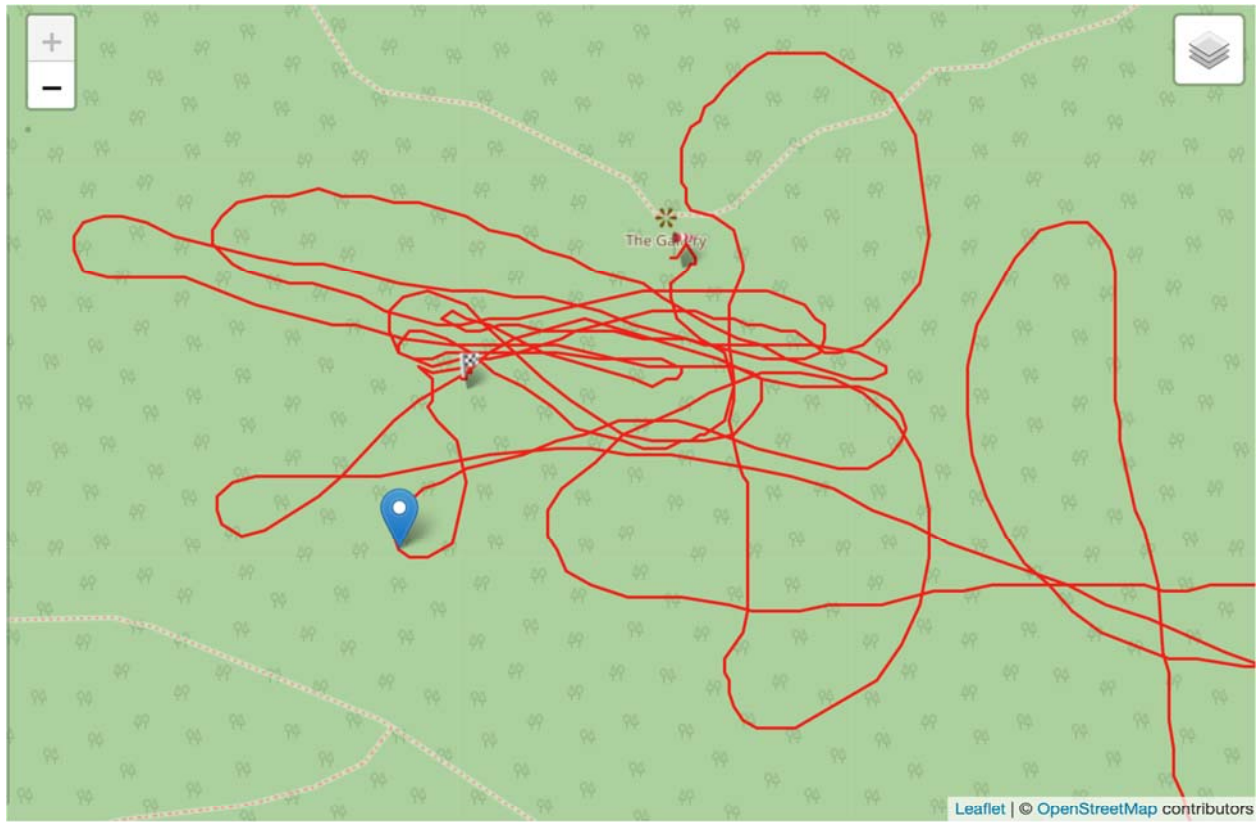


Figure 5: Flight path before the accident

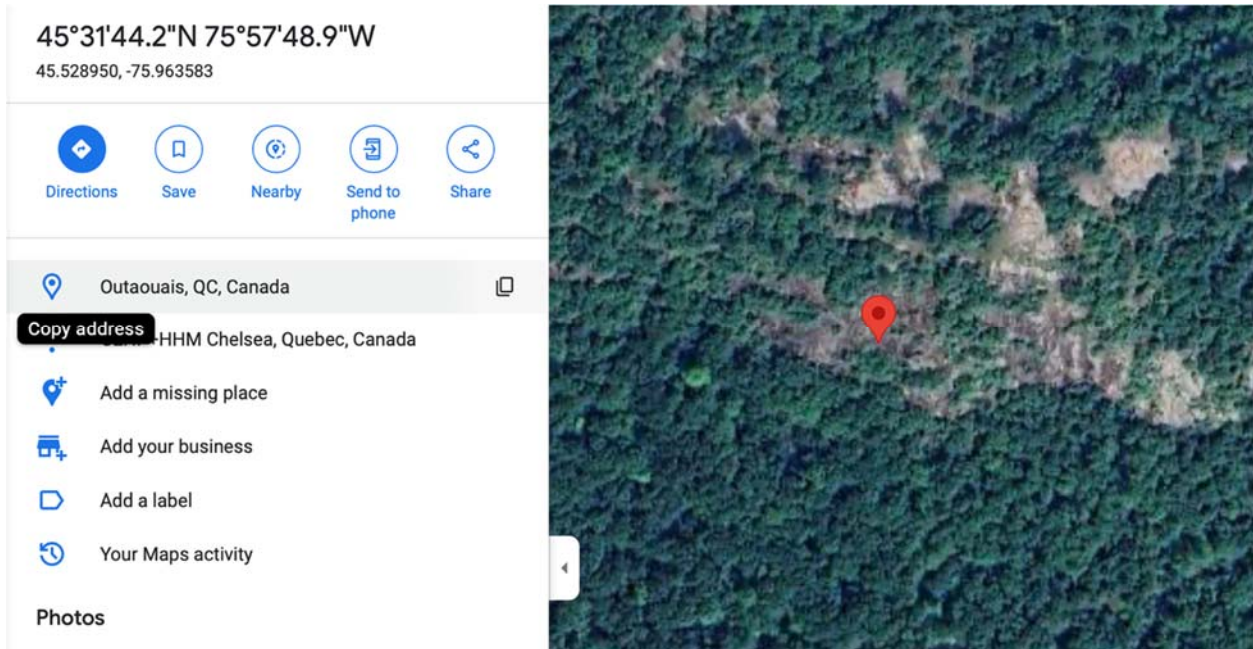


Figure 6: Site of the accident