



Loss of Control - Inflight (LOC-I)

Investigation Report

BogdanFly X-wing Paraglider

Sunset Peak, Lantau,

Hong Kong

17 June 2024

IVR-2026-03

AAIA Investigations

Pursuant to the Hong Kong Civil Aviation (Investigation of Accidents) Regulations (Cap. 448B), the sole objective of the investigation and the Investigation Report is the prevention of accidents and incidents. It is not the purpose of the investigation to apportion blame or liability.

The Chief Inspector instigated an inspector's investigation into the accident in accordance with the provisions in Cap. 448B.

This accident Investigation Report contains information of an occurrence involving a paragliding activity at Sunset Peak, Lantau, Hong Kong on 17 June 2024.

The Hong Kong Observatory, the Lands Department, Hong Kong China Paragliding Association, and the variometer manufacturer, Syride, provided assistance to the investigation team.

This Investigation Report supersedes all previous Preliminary Report and Interim Statements concerning this accident investigation.

All times in this Investigation Report are in Hong Kong Local Time unless otherwise stated.

Hong Kong Local Time is Coordinated Universal Time (UTC) + 8 hours.

Chief Accident and Safety Investigator

Air Accident Investigation Authority

Transport and Logistics Bureau

Hong Kong

October 2026

Synopsis

On 17 June 2024, a paraglider pilot (the Pilot) and his companions went to the South Lantau East paragliding take-off site in Lantau South Country Park. He took off alone at around 1430 hrs using a reverse launch. However, strong winds lifted him while he was still facing backward. He managed to turn forward shortly after take-off. The take-off site was surrounded by low-lying clouds with fresh gusts of wind.

The Pilot planned to land at Lower Cheung Sha Beach - a flight that normally took two to three minutes. Shortly after take-off, the wind pushed his paraglider upwards towards the clouds. The wind kept blowing, lifting the Pilot higher until his companions lost sight of him. They kept trying to reach him by radio but got no reply.

At about 1500 hrs, the Pilot briefly responded on the radio, saying he was stuck in a tree and badly injured. He could not send his location because he could not reach his phone. Soon after, he stopped responding.

Around 20 minutes after the companions still could not establish visual contact with the Pilot, they decided to call the emergency services. A joint-departmental search and rescue operation was initiated later.

Rescuers found him unconscious near Sunset Peak, about 100 metres from Distance Post L015 of Lantau Trail Section 2¹, at around 2125 hrs. He was still strapped into his paraglider. He was taken to North Lantau Hospital unconscious at approximately 0240 hrs on 18 June 2024. He was later certified dead.

The accident was probably caused by loss of effective pilot control of the paraglider under strong lift. As a result, the Pilot collided with the terrain that rendered multiple injuries to the Pilot.

The investigation team has made one safety recommendation in this report.

¹ The location of the Direction Post is at Latitude (N) 22.25443, Longitude (E) 113.95327.

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1. Factual Information

1.1. History of the Flight

- (1) A paraglider pilot (the Pilot) went to the take-off site of the South Lantau East paragliding activities area in the Lantau South Country Park with his companions on 17 June 2024. According to one of the companions, he took off solo by executing a reverse launch at about 1430 hours ((a) in Figure 1). While he was still in the reverse direction, he was lifted off by the strong wind ((b) in Figure 1). He managed to adjust his direction and face forward shortly after the liftoff ((c) and (d) in Figure 1). The take-off site was surrounded by low-lying clouds with fresh gusts of wind.



(a)



(b)



(c)



(d)

Figure 1: Reverse Launching by the Pilot

(Note: The images were captured from a video taken by one of the companions. Refer to paragraph 1.11.3.)

- (2) The Pilot had planned to land at Lower Cheung Sha Beach. The normal flight duration was typically two to three minutes. After he had flown for a short while, his paraglider was slowly lifted up towards the cloud by the wind. His companions advised him on a handheld radio transceiver to

apply “big ears”² and speed bar³ to counter the climb. However, no response was heard from the Pilot.

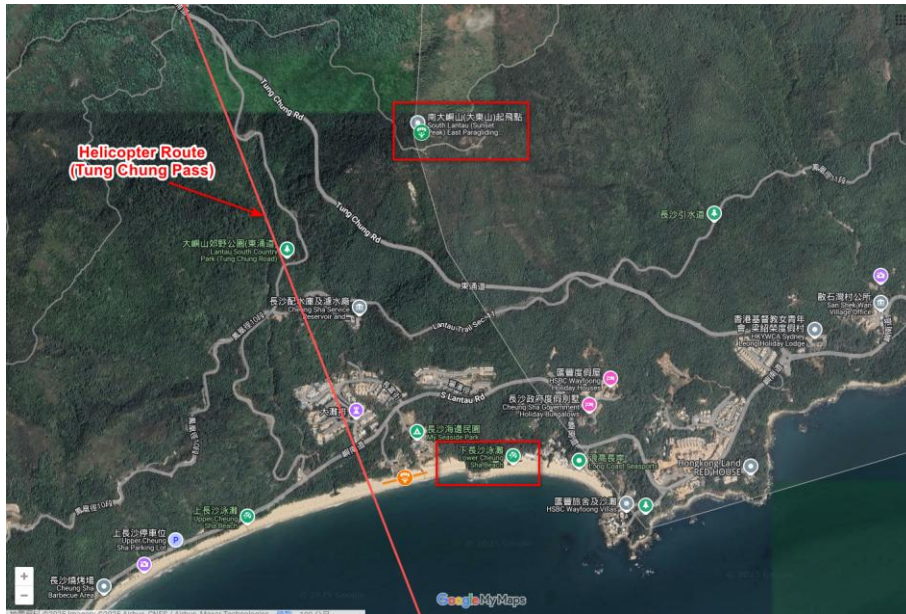


Figure 2: Take-off Site and Landing Area

- (3) The wind kept blowing, and the Pilot's paraglider ascended further. Eventually, his companions lost visual contact with it. They persistently tried to contact the Pilot on the radio, but there was still no response from him.
- (4) At around 1500 hours, they finally heard the Pilot's voice on the radio, advising in several broken messages that he was stuck in a tree and had sustained injuries that were causing him significant pain. He could not send out his location because he could not reach his mobile phone. After a while, there were no more voice messages from him on the radio.
- (5) Around 20 minutes after the companions still could not establish visual contact with the Pilot, they decided to call the emergency services. A joint-departmental search and rescue operation was initiated later.
- (6) The Pilot was later located on a slope near Sunset Peak (UTM Grid Reference 49Q HE 043 637), about 100 meters away from Distance Post L015 of Lantau Trail Section 2 at approximately 2125 hours. He was unconscious and still strapped in his paraglider.

² “Big ears” is an emergency descent method for paragliding flight. Refer to paragraph 1.18.2.1.

³ A speed bar is a part of the paraglider that will help pilot to increase the speed. Refer to paragraph 1.18.3.



Figure 3: Location of the Pilot

- (7) The Pilot was conveyed to North Lantau Hospital in an unconscious state at around 0240 hours on 18 June 2024. He was later certified dead.

1.2. Injuries to Persons

The Pilot perished in the accident.

Injuries	Crew	Passengers	Others
Fatal	1	-	-
Serious	-	-	-
Minor / None	-	-	-

Table 1: Injuries to Persons

1.3. Damage – Paraglider

The paraglider suffered minor damage. Refer to paragraph 1.12.

1.4. Other Damage

No other damage was caused.

1.5. Personnel Information

1.5.1. General

Pilot	Male, aged 74
Weight	65 kg
Licence details:	USHPA ⁴ P2 Novice Pilot (current membership status unknown), HKPA ⁵ 3 (membership expired)
Flying experience:	27.7 flying hours in 95 flights between July 2023 and June 2024, as recorded in the Pilot's variometer

Table 2: Pilot Information

1.5.2. Experience, Training and Qualifications

- (1) The Pilot's total flying hours, records, and licence details could not be located. According to one of his friends, the Pilot had more than six years of flying experience, but this cannot be verified by the AAIA.
- (2) The information in Table 2 above was obtained with the assistance from the HKPA and the variometer of the Pilot.
- (3) The Pilot was a member of the USHPA since 2017 and his rating was P2 Novice Pilot.
- (4) He was also a member of the HKPA between December 2020 and December 2023. His last rating was HKPA 3⁶.

⁴ United States Hang Gliding and Paragliding Association

⁵ Hong Kong China Paragliding Association

⁶ HKPA 3 stands for "Pilots" who are capable of conducting "Active Flying (preparing for turbulence, recovery and descending techniques...)". (Source: https://www.hkpa.net/HKPA_Pilot_Ratings)

1.6. Paraglider Information

- (1) The Pilot operated an EN⁷-C certified BogdanFly X-Wing paraglider of size 23 (S size). According to the manufacturer, it was produced in October 2023. It was fitted with a “BF V1” harness of S size.



Figure 4: The Pilot’s BogdanFly X-Wing 23 Paraglider



Figure 5: Data Labels of the Pilot’s Paraglider

- (2) Lines are attached to the risers using soft links which are strong connecting elements made of the Dyneema^{®8} and fixed in the ring by a knot-hammer.

⁷ European Norm

⁸ A manufacturer of polyethylene lines used on paraglider



(Source:
<https://flybubble.com/advance-soft-links-11159-8-pack>)

(Source:
<https://www.youtube.com/watch?v=f0ML0YmtkV8>)

Figure 6: Exemplar of Generic Soft Link

- (3) EN is a 4-level paraglider certification system, namely A, B, C and D. According to the British Hang Gliding & Paragliding Association (BHPA), EN-C paragliders are “Designed for pilots familiar with recovery techniques, who fly “actively” and regularly, and understand the implications of flying a glider with reduced passive safety. (For pilots who are Advanced Pilot rated, have several hundred hours logged (many of these in thermic conditions), have completed SIV courses, are flying 10 or more hours a month, and enjoy dealing with large asymmetric collapses etc.)”⁹.

⁹ https://www.bhpa.co.uk/pdf/En_PG_Classes.pdf

Class	Description of flight characteristics	Description of pilot skills required (BHPA expanded version)
A	Paragliders with maximum passive safety and extremely forgiving flying characteristics. Gliders with good resistance to departures from normal flight.	Designed for all pilots including pilots under all levels of training. <i>(For all pilots especially those in their first year of flying and for experienced pilots with limited currency, for example those who fly less than 25 hours a year.)</i>
B	Paragliders with good passive safety and forgiving flying characteristics. Gliders with some resistance to departures from normal flight.	Designed for all pilots and may be suitable for pilots under training if recommended by the manufacturer. <i>(There are a wide range of gliders produced in this category. Some are closer to 'A' class gliders. Others are for pilots who have gained more than 30 hours mixed flying (at least ten in thermic conditions) and hold a 'Pilot' rating. B class gliders are also suitable for experienced pilots who fly less than 50 hours a year.)</i>
C	Paragliders with moderate passive safety and with potentially dynamic reactions to turbulence and pilot errors. Recovery to normal flight may require precise pilot input.	Designed for pilots familiar with recovery techniques, who fly "actively" and regularly, and understand the implications of flying a glider with reduced passive safety. <i>(For pilots who are Advanced Pilot rated, have several hundred hours logged (many of these in thermic conditions), have completed SIV courses, are flying 10 or more hours a month, and enjoy dealing with large asymmetric collapses etc.)</i>
D	Paragliders with demanding flying characteristics and potentially violent reactions to turbulence and pilot errors. Recovery to normal flight requires precise pilot input.	Designed for pilots well practised in recovery techniques, who fly very actively, have significant experience of flying in turbulent conditions, and who accept the implications of flying such a wing. <i>(For pilots who have been flying for many years, fly more than two hundred hours a year often in strong thermic conditions and are masters of the various SIV skills.)</i>

Figure 7: EN Classes of Paragliders Published by the BHPA

(Source: https://www.bhpa.co.uk/pdf/En_PG_Classes.pdf)

- (4) The harness used by the Pilot was an old version of the BogdanFly seat harness which did not have any certification.



Figure 8: The Pilot's BF V1 Harness

- (5) The Pilot also carried a reserve parachute in his harness. The model was "BFreserve" of size 23 made by BogdanFly in October 2023. It was

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certified to EN 12491:2015+A1:2021¹⁰ and NfL 2-565-20¹¹. It could carry a maximum weight of 90 kg in flight.



Figure 9: The Pilot's Reserve Parachute

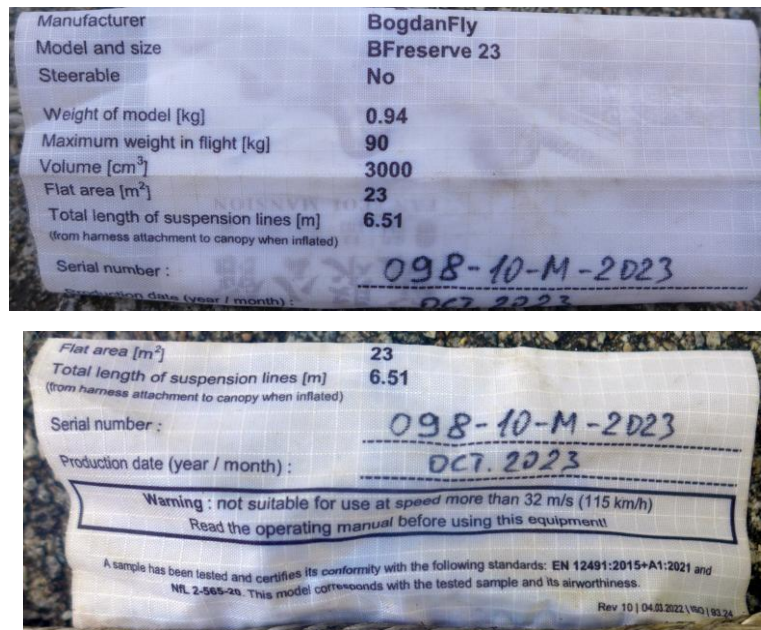


Figure 10: Data Labels of the Pilot's Reserve Parachute

¹⁰ EN 12491:2015+A1:2021 Paragliding equipment - Emergency parachutes - Safety requirements and test methods

¹¹ NfL 2-565-20, also known as "LTF NfL 2-565-20," is a German technical guideline and airworthiness requirements for the certification of hang gliders and paragliders.

1.7. Meteorological Factors

1.7.1. Hong Kong China Paragliding Association Site Guides

The HKPA provided the following site guides of South Lantau East (Sunset Peak) to paraglider pilots at the time of the accident.

1.7.1.1. Wind Direction

“Flyable wind direction: South (S-SE)”

1.7.1.2. Wind Force

“Winds to look for on the HKO¹² website are Cheung Chau with as much S as possible and force 2-3. Never take off a paraglider in force 5 and above wind condition.”

(Note: “...as much as S...” means “...as much as south ...”. Wind force 2-3 is equivalent to wind speed of 7-19 km/h, while wind force 5 is 31-40 km/h.)

1.7.1.3. Special Requirements

The Special Requirement regarding meteorological conditions is:

“DO NOT Enter Cloud on this site. There are Aircraft nearby.”

1.7.2. Weather Information from the Hong Kong Observatory

At 1230 hrs on 17 June 2024, the HKO issued the following weather forecast for local aviation.

1.7.2.1. General

- (1) According to the forecast, there was “SIGNIFICANT WEATHER WITHIN 100 KILOMETER RADIUS OF H.K: ISOL CUNIM/TS AND ASSOCIATED HAZARDS”. This means there would be isolated thunderstorms within 100 km of Hong Kong. These storms would be associated with cumulonimbus clouds, which are tall, dense clouds that produce severe weather.

¹² Hong Kong Observatory

- (2) The synopsis of the weather situation was “A SOUTHERLY AIRSTREAM IS AFFECTING THE COASTAL AREAS OF GUANGDONG .”

1.7.2.2. Aviation Forecast for 100-Kilometre Radius Around Hong Kong from 1300 to 2300 hrs

1.7.2.2.1. Wind Direction, Speed, and Temperature

- (1) The surface wind would be 10-15 knots (kt) (19-28 km/h) from the 200 degrees (south/south west) direction, and temporarily variable directions at 15 kt (28 km/h) gusting to 25 kt (46 km/h) in thunderstorms. The temperature was between 28-33 degree C.
- (2) The wind at 2,000 ft (610 m) would be 15-20 kt (28-37 km/h) from the 210 degrees (south/south west) direction. The temperature was 25 degree C.

1.7.2.2.2. Weather

There would be sunny periods during the day with a few showers and isolated thunderstorms.

1.7.2.2.3. Cloud (Height above Mean Sea Level)

The cloud would be 1 to 2 oktas¹³ (1/8 to 2/8 of the sky covered by cloud) at 1,000 feet (ft), and 3 to 4 oktas at 2,000 ft. There would also be temporarily 1 to 2 oktas of cumulonimbus clouds at 800 ft, 3 to 4 oktas at 1,500 ft, and 5 to 7 oktas at 4,000 ft.

1.7.2.2.4. Visibility

The visibility was 10 km, temporarily 4 km in showers, and temporarily 2 km in thunderstorms.

1.7.2.2.5. Turbulence

There would be moderate to severe turbulence near cumulonimbus clouds/thunderstorms, and moderate turbulence offshore and near hills.

¹³ Oktas are a unit of measurement used in meteorology to describe the extent of cloud cover in the sky. The sky is divided into eight parts (oktas), and each okta represents one-eighth of the sky covered by clouds. This system provides a standardized way to report and interpret cloud cover, which is crucial for aviation operation.

1.7.2.2.6. Further Outlook

The winds would be moderate to fresh south to south-westerly. It would be mainly cloudy with a few showers and isolated thunderstorms.

1.7.2.2.7. Special Weather Report

There was no special weather report issued on the date of the occurrence.

1.7.2.3. Thunderstorm Warning

There was no Thunderstorm Warning in force on the date of the occurrence.

1.7.2.4. Wind Data from Nearby Weather Station

- (1) The wind data collected by the HKO automatic weather station at Cheung Chau (CCH) provided a good reference for the meteorological information of the South Lantau East paragliding activities area.
- (2) The “10-minute mean wind” data between 1330 hrs and 1500 hrs of 17 June 2024 are presented in Table 3 below.

Time (in HKT)	10-minute mean wind direction (nearest 10 degree)	10-minute mean wind speed (km/h)	10-minute maximum gust (km/h)
1330	190	24	30
1340	190	24	32
1350	190	25	32
1400	190	25	33
1410	190	28	38
1420	190	27	33
1430	190	25	33
1440	190	26	32
1450	190	22	28
1500	180	22	30

Table 3: 10-minute Mean Wind Speed and Maximum Gust Data

- (3) The data between 1330 to 1530 hrs from CCH automatic weather station indicated that the mean 10-minute mean wind speeds were 22 to 28 km/h (equivalent to wind force 4, moderate). The wind was blowing from the south (S, 180 to 190 degrees). The 10-minute maximum gust was 28 to 38 km/h (equivalent to wind force 4 to 5, moderate to fresh).
- (4) The “1-minute mean wind” data between 1430 hrs and 1440 hrs of 17 June 2024 are presented in Table 4 below.

Time (in HKT)	1-minute mean wind direction (nearest 10 degree)	10-minute mean wind speed (km/h)	10-minute maximum gust (km/h)
1430	190	27	30
1431 ¹⁴	190	27	30
1432	190	28	30
1433	190	24	29
1434	190	26	30
1435	190	26	30
1436 ¹⁴	190	24	30
1437	190	26	29
1438	190	27	32
1439	190	25	29
1440	190	26	28

Table 4: 1-minute Mean Wind Speed and Maximum Gust Data

- (5) The data between 1430 to 1440 hrs from CCH automatic weather station indicated that the mean 1-minute mean wind speeds were 24 to 28 km/h (equivalent to wind force 4, moderate). The wind was blowing from the south (S, 190 degrees). The 1-minute maximum gust was 28 to 32 km/h (equivalent to wind force 4 to 5, moderate to fresh).

¹⁴ The flight, as recorded in the variometer of the Pilot, started at 1431:41 hrs. The recording stopped at 1436:23 hrs.

1.7.2.5. Rainfall Rate, Cloud Base, and Visibility

- (1) According to the Constant Altitude Plan Position Indicator (CAPPI) radar image of 64-km range at a height of 3 km Above Mean Sea Level (AMSL) above Hong Kong at 1430 hrs on 17 June 2024, the rainfall rate was zero near Sunset Peak.

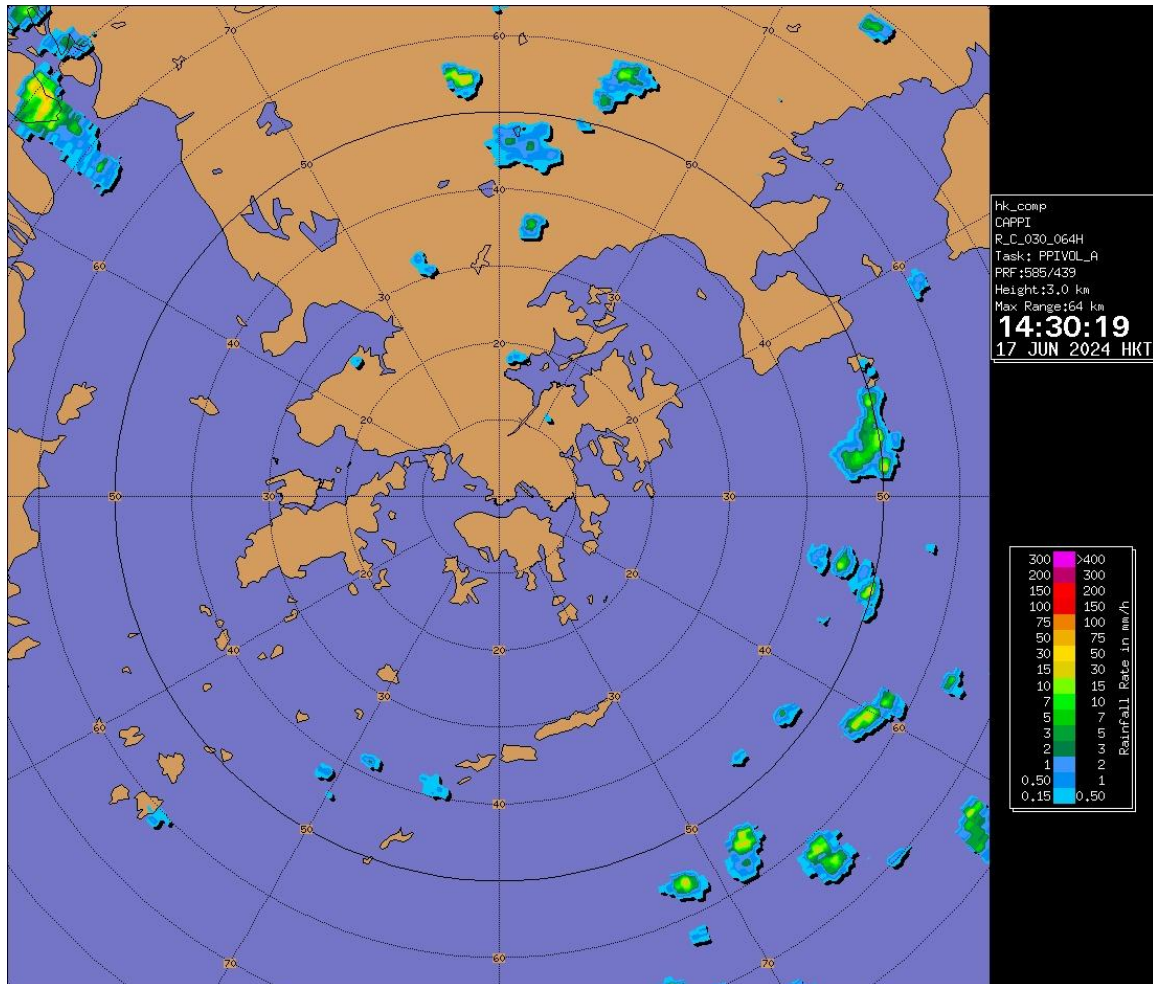


Figure 11: 3-km Radar Image of 64-km Range at 1430 hrs on 17 June 2024

- (2) According to the weather photo taken at CCH station (Figure 13, looking towards the northwest) at 1430 hrs of 17 June 2024, the hill top of Sunset Peak was fully covered by cloud.

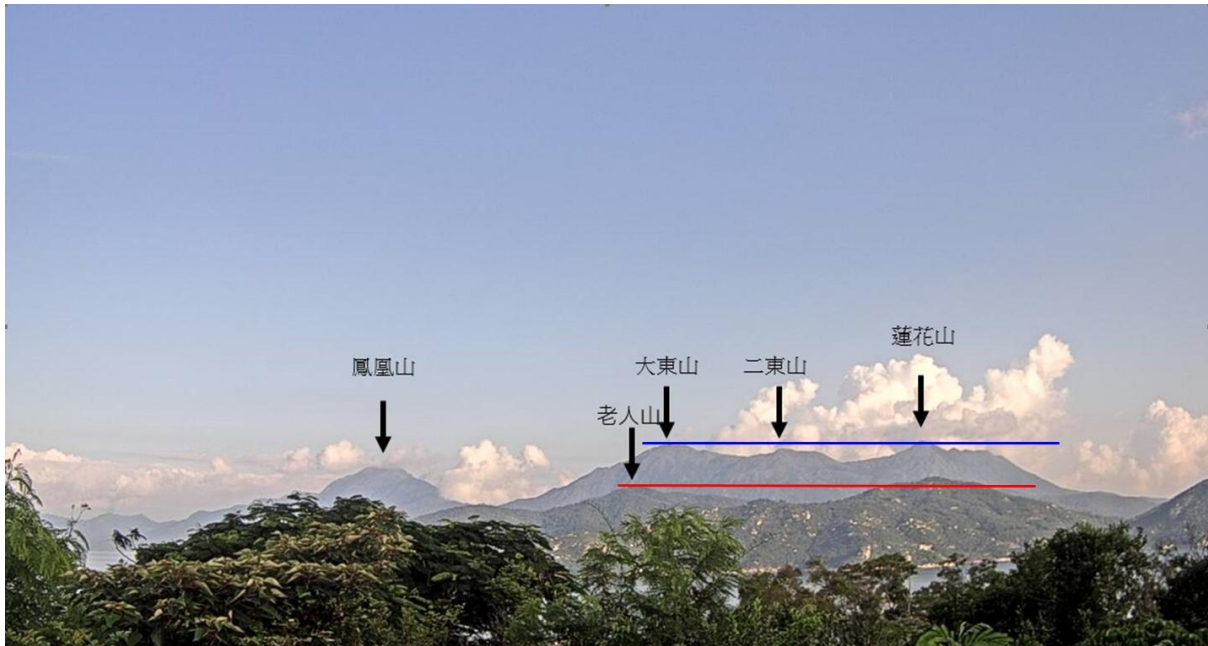


Figure 12: Landmark Reference



Figure 13: Photo of Sunset Peak Taken at 1430 Hrs of 17 June 2024

- (3) According to the tephigram¹⁵ at 0800 hrs on the day of the accident, the dew temperature (red line) and the air temperature (black line) were equal at a height of about 800 m. This indicated that cloud was formed at this level. Although this tephigram was produced by using temperature, dew-point temperature, wind speed and wind direction data measured by radiosonde at King's Park of Hong Kong at 0800 hrs, it still provided a good reference for the possible cloud formation at Sunset Peak.

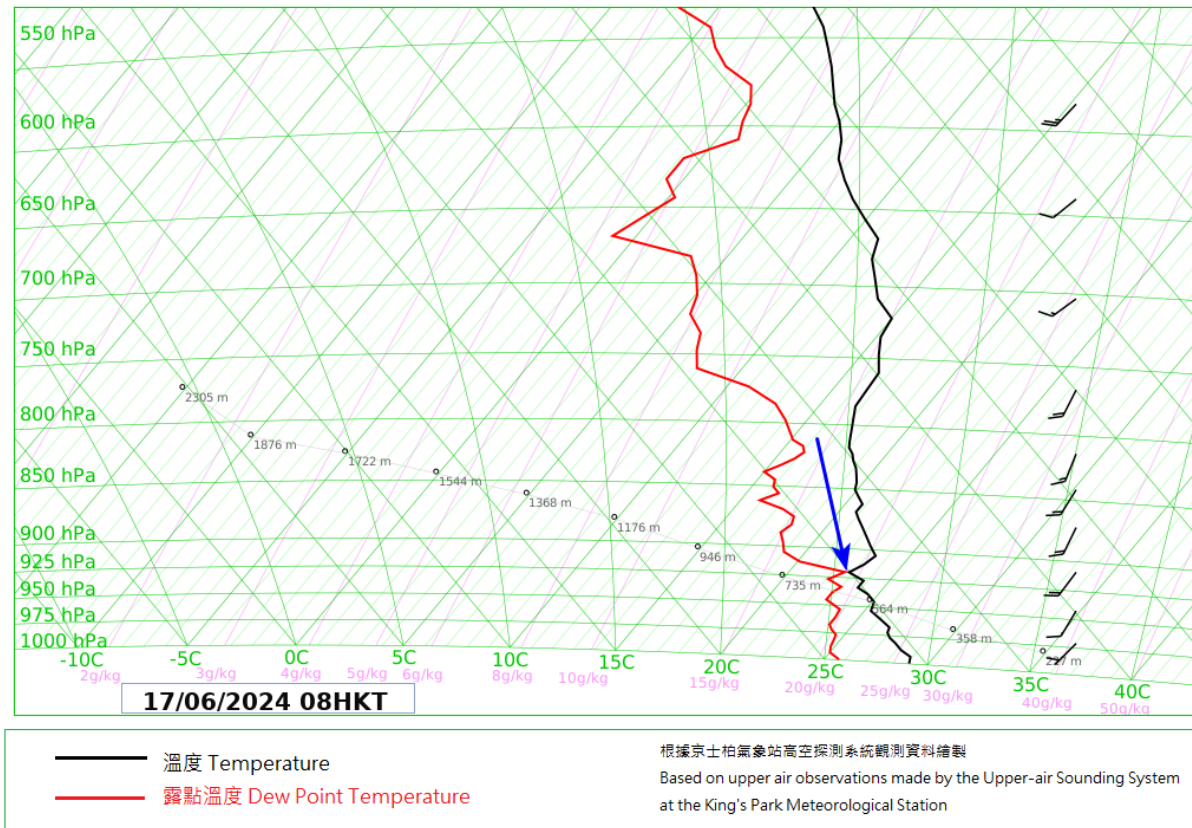


Figure 14: Tephigram at 0800 hrs

1.7.2.6. In-situ Weather Conditions

According to the interview statement of one of the Pilot's companions, when they arrived at the pavilion at the base of Sunset Peak, there was some rain. It was slightly foggy but the visibility was still alright. When they arrived at the take-off site of South Lantau East, the fog was cleared. The cloud base was not too low. They could see the Lower Cheung Sha Beach (the landing field). They made an agreement that they would fly straight to the beach after take-off.

¹⁵ <https://www.hko.gov.hk/en/education/meteorological-instruments/automatic-weather-stations/00504-assessing-atmospheric-stability-by-tephigram.html>

1.8. Navigation Aids

Not applicable.

1.9. Communications

The Pilot carried a two-way radio transceiver. During the examination by the investigation team, it was noticed that both the active and standby frequencies were set to HKPA's local safety frequency 145.9875 MHz. The transceiver was tested and functioned normally.



Figure 15: The Pilot's Transceiver and the Pre-set Frequencies

1.10. Paragliding Activity Area

- (1) South Lantau East paragliding activities area is located in the Lantau South Country Park. It is one of the locations where paragliding activities are frequently carried out. Its boundary and operating altitude can be found in Section ENR 5.5 of the Aeronautical Information Publication Hong Kong (AIP HK) published by the Civil Aviation Department (CAD) at the time of the accident.

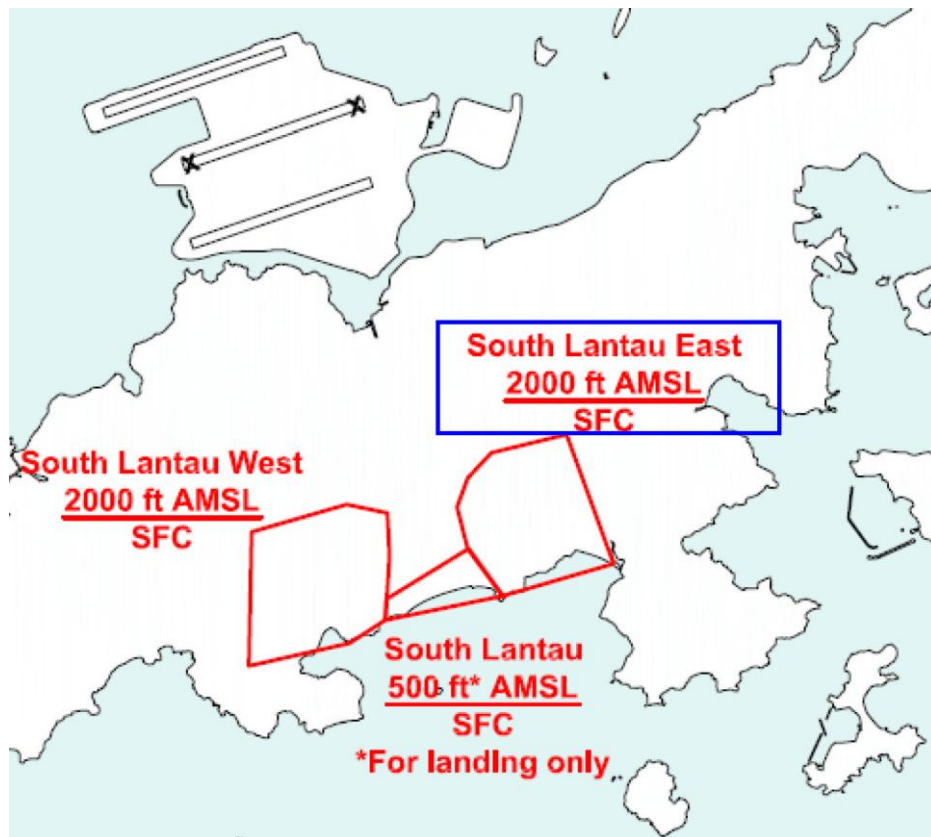


Figure 16: South Lantau East Paragliding Activities Area

(Source: Aerial Sporting and Recreational Activities Location, AIP HK)

- (2) South Lantau East paragliding activities area is also within the CTR Lantau Zone (Lantau Control Zone) which is a Class C airspace. The operating altitude of the area is from the ground surface (SFC) to 2,000 feet (609.6 m) AMSL.
- (3) The take-off site of the accident flight was at a height of about 398 m AMSL and within the boundaries of the South Lantau East paragliding activities area.

1.11. Flight Recorders

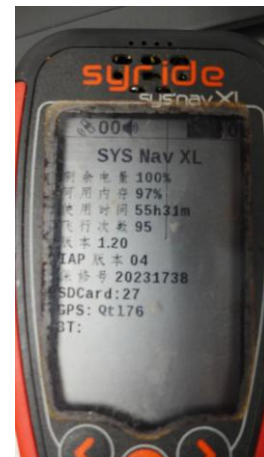
1.11.1. Variometer

- (1) A variometer was an integrated device with altimeter, compass and Global Positioning System (GPS) functions. It provided and recorded not only signals of rates of climb and descent, but also GPS positions and pressure altitudes for paragliding activities.
- (2) The Pilot's variometer is a Syride SYS'NAV XL. The flight information is displayed on the screens. Pressing on the main button allows a pilot to record his position and obtain the GPS coordinates, the distance, the vertical gain, the time that has elapsed since the pointing of this point as well as an indication of the route to follow to return to this position.
- (3) A pilot can make use of the Syride's Route Maker website or a mobile app to create waypoints and routes (containing a series of waypoints), and load them into the variometer. They can activate the routes and follow the waypoints inflight, or use the Goto (Waypoint) function for navigation purpose.
- (4) Data is stored in the International Gliding Community (IGC) file in the variometer.

Note: The IGC file type is primarily associated with the Global Positioning System by the Fédération Aéronautique Internationale (FAI). "IGC" comes from "the International Gliding Commission". IGC-files provide a standard for exchanging data logs from GPS flight recorders.



(Source: <https://www.syride.com/en/instruments/XL>)



(The Pilot's Variometer)

Figure 17: Variometer Used by the Pilot

- (5) Basic data in an IGC file contains information on
- UTC time;
 - GPS location in longitude/latitude; and
 - Pressure altitude and GPS altitude (in metres).
- (6) For some models of variometer with capabilities of presetting waypoints and routes, their corresponding data will also be recorded in the IGC file.
- (7) The Pilot's variometer was stored in the flight deck and turned on throughout the accident flight. The data in the Pilot's variometer was downloaded successfully for flight track analysis.
- (8) The data covered a total of 27.7 flying hours in 95 flights, including the accident flight, between July 2023 and June 2024. The flights included 57 at Ma On Shan, 11 at Shek O, 6 at South Lantau East, 12 at South Lantau West, and 9 overseas.
- (9) The duration of the IGC data of the accident flight was 5 minutes and 12 seconds (1431:41 – 1436:53 hrs). During the analysis of the data, it was identified that the recording stopped while the paraglider was still in the air.
- (10) There was no record of route activation and waypoint in the IGC file of the accident flight.

1.11.2. Flight Track

The accident flight track was generated by the Lands Department using the IGC File data retrieved from the Pilot's variometer (refer to Figure 35).

1.11.3. Video Recording

The first 36 seconds of the accident flight was video-recorded by a witness. The video clip has provided valuable insights into the flight.

1.12. Wreckage and Impact

1.12.1. General

The paraglider and the associated equipment were preserved by the HKPF. A detailed examination of them was conducted by the investigation team with the assistance of an HKPA expert.

1.12.2. Canopy and Harness

- (1) The BogdanFly X-Wing 23 Paraglider was examined. The right-hand (RH) C5 loop was found broken due to stress and separated from the tab. The left-hand (LH) StU line and the RH C6 line were found broken due to stress. The line check results are in paragraph 1.16.1.

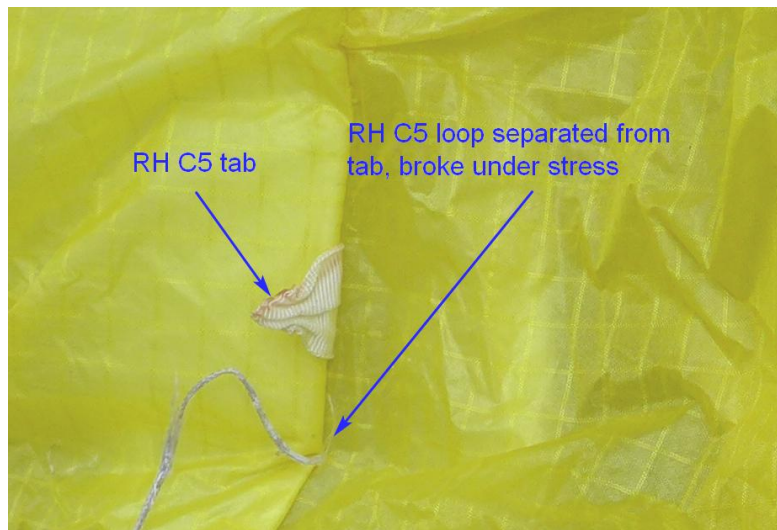


Figure 18: Right-hand C5 Loop Broken and Separated



Figure 19: Left-hand StU Line Broken



Figure 20: Right-hand C6 Line Broken

- (2) No damage was found on the BogdanFly BF Seat Harness V1.

1.12.3. Paragliding Reserve Parachute

The investigation team removed the reserve parachute from the reserve compartment for inspection and did not identify any abnormal findings.

1.12.4. Helmet

- (1) The helmet of the Pilot, Model “PST 500” of size M, was made by Decathlon (refer to paragraph 1.15.3).
- (2) An obvious crack could be observed on the aft edge of the helmet.



Figure 21: The Pilot's Helmet

- (3) According to a label on the helmet, it was certified to EN 1077 Class B. It met one of the specifications recommended by the CAD on their Safety Guidance on Paragliding Activities (CAD Safety Guidance) website (refer to paragraph 1.17.1).

- (4) One of the labels on the helmet showed “2022-11-16”. However, the vendor’s agent in Hong Kong could not confirm that it was the manufacture date.



Figure 22: The Certification Label of the Helmet

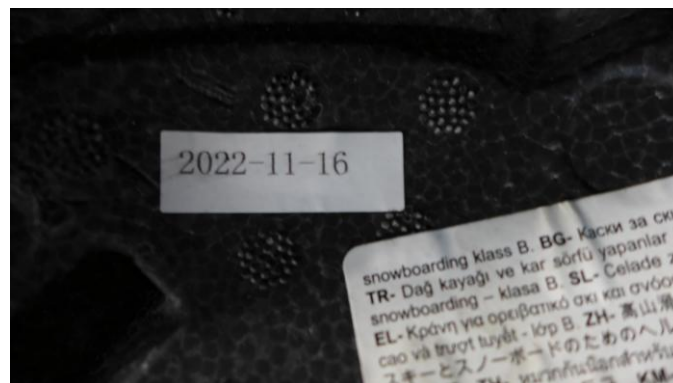


Figure 23: A Label Showing “2022-11-16”

1.12.5. Other Equipment

The Pilot carried an external flight deck which accommodated his variometer and a compass.



Figure 24: External Flight Deck and Accessories of the Pilot

1.13. Medical/Pathological Information

- (1) There were multiple abrasions over the Pilot's face, four limbs, chest and abdomen. Comminuted fractures of his facial bones, left inner forearm bone at its lower end, and right inner leg bone at its lower end were noted.
- (2) According to the autopsy report, the cause of death as shown by the autopsy appeared to be multiple injuries.

1.14. Smoke, Fire, and Fumes

Not applicable.

1.15. Survival Aspects

1.15.1. Distress Call

The Pilot was able to notify his companions by radio that he had been stuck in a tree and had sustained injuries. However, he was unable to provide his location because he could not reach his mobile phone.

1.15.2. Joint-departmental Search and Rescue Operation

- (1) The Hong Kong Fire Services Department (FSD) was notified by the Regional Control and Command Centre (RCCC) of the 999 Hotline at around 1519 hrs. The GFS was also notified by the Fire Services Communications Centre (FSCC) at around 1538 hrs. A joint-departmental search and rescue operation was initiated. The Civil Aid Service (CAS) was later called out for participation in the operation.

- (2) According to the records, the weather was mainly cloudy with a few showers. The ground was slippery. The cloud base was about 335 m between 1604 hrs and 2044 hrs.
- (3) The Pilot was located on a slope near Sunset Peak, about 100 meters away from Distance Post L015 of Lantau Trail Section 2 at approximately 2125 hours. He was found unconscious and still strapped in his paraglider. The weather was described as wet, misty, and with a few showers.
- (4) The pilot was transported down the hill in an unconscious state and conveyed to North Lantau Hospital at around 0240 hours on 18 June 2024. He was later certified dead.

1.16. Tests and Research

1.16.1. Aging Check of Paraglider Lines

- (1) An aging check of paraglider lines was carried out to determine their conditions with the assistance of the HKPA expert.
- (2) The results indicated that the canopy was intact. The RH C5 line, the RH C6 loop, and the LH StU line broke probably due to stress. Due to the aging of the Dyneema^{®16} lines, the C group has shrunk by an average of 22mm on the LH side and 14.5mm on the RH side of the wing. The lines at the centre of the wing have shrunk less than those on the sides and the tips of the wing, reflecting a normal aging process as the middle wing took more weight and shrunk less.
- (3) The angle of attack of the wing was found increased by comparing the length of different groups of lines, which is 18mm on the LH and 14.5mm on the RH.

¹⁶ A manufacturer of polyethylene lines used on paraglider

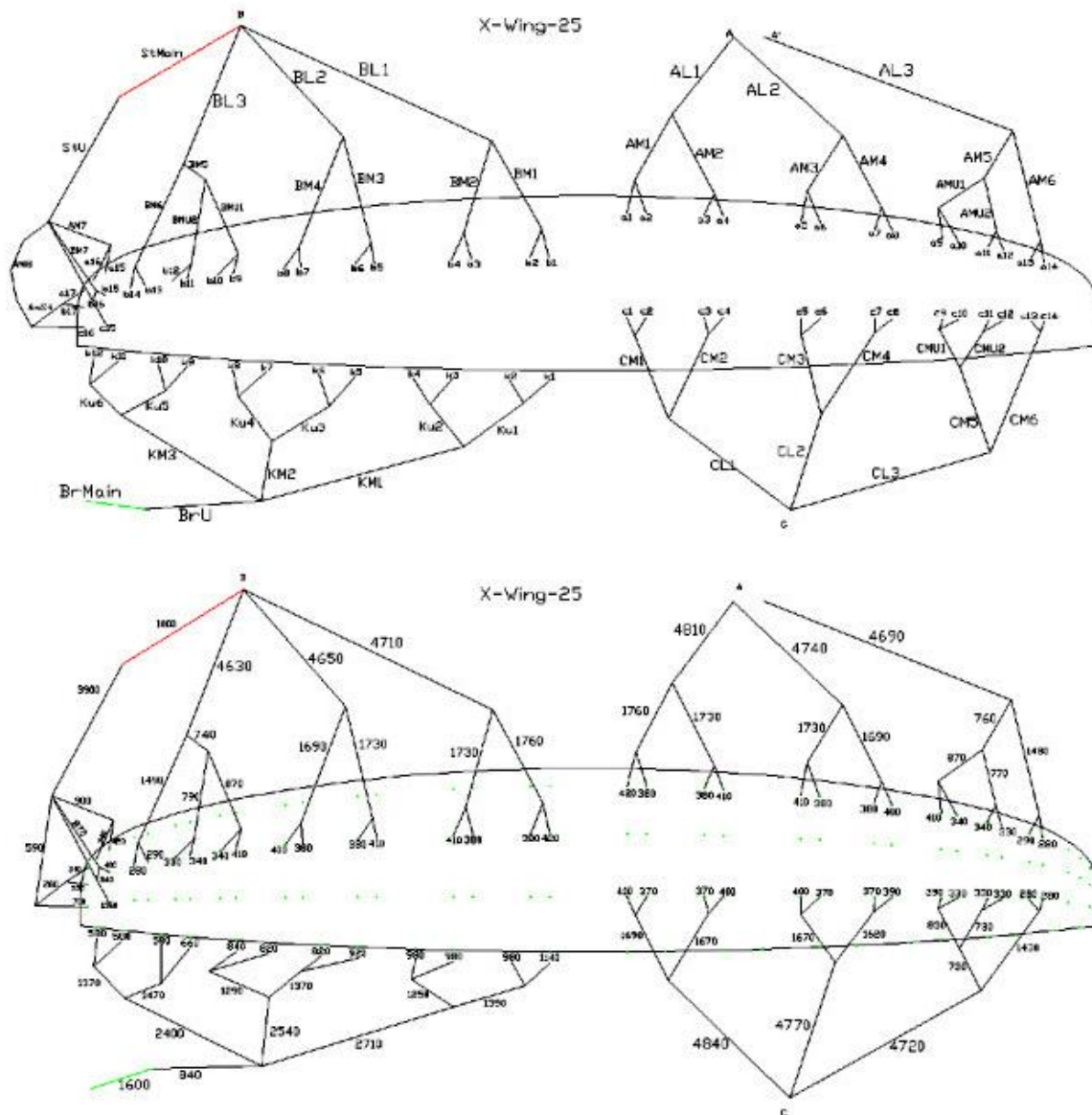


Figure 25: Line Diagram of BF X-wing

1.17. Organisation, Management, System Safety

1.17.1. Civil Aviation Department

- (1) The CAD regulates civil aviation activities in Hong Kong. In view of the increasing popularity of paragliding activities in Hong Kong, the CAD has taken initiatives to publish the Safety Guidance on Paragliding Activities on their website¹⁷.
- (2) The safety guidance relevant to this accident at the time of the accident was published on 30 May 2024. It included, but not limited to, the following safety measures.
 - (a) *“Operating conditions - Paragliding activities shall only be conducted during daylight hours and in visual meteorological conditions. Paraglider pilots must remain clear of clouds and in sight of the ground at all times.”*
 - (b) *“Paraglider pilots could make reference on these site guides¹⁸ (especially on recommended pilot qualifications and weather conditions) before the conduct of paragliding activity.”*
 - (c) *“Be familiar with the site particulars, including the boundaries of paragliding sites as published on the HKAIP, the suitable take-off/landing areas of the site, and the potential hazards.”*
 - (d) *“Conduct a risk assessment, including but not limited to the prevailing site conditions, and understand the risk of the activity. Pay extra attention on risks associated with changing weather conditions, inclement weather and under emergency situations, and take corresponding mitigation measures according to the risk assessment.”*
 - (e) *“Carry a position tracking device that would send out distress position signals or use services or applications that would share their real-time location information, in order to facilitate a timely search and rescue operation during an emergency.”*
 - (f) *“Check the weather condition including weather forecast of the site to ensure it is suitable for the paragliding activity, and verify that there are no applicable weather warnings or approaching inclement weather. Paraglider pilots may refer to the guidelines produced by*

¹⁷ <https://www.cad.gov.hk/english/paragliding.html>

¹⁸ The site guides established by local paragliding association(s) for their members / paraglider pilots

local paragliding association(s) on the recommended weather conditions (such as recommended wind direction and speed) at individual site.”

- (g) “Ensure that the paraglider, harness, helmet and safety equipment are in good condition with no tears, broken lines, or frayed webbing.”

1.17.2. Hong Kong China Paragliding Association Limited

- (1) The HKPA, formerly the Hong Kong Paragliding Association Limited, was established in 1990 to promote and encourage paragliding activities. It was renamed as Hong Kong China Paragliding Association Limited in May 2023.
- (2) The HKPA was recognised by the Sports Federation & Olympic Committee of Hong Kong, China (SF&OC) as the National Sports Association for paragliding activities in Hong Kong. Operating under the provisions of the Societies Ordinance, the HKPA represents the interest of paraglider pilots and ensures the safe conduct of paragliding activities in Hong Kong.
- (3) The HKPA publishes safety guidance on their website, including, but not limited to the following safety measures.
 - (a) The minimum equipment for flight is:
 - (i) airworthy paraglider;
 - (ii) airworthy harness;
 - (iii) a helmet certified to either EN966 (airsports), EN1077 A & B, ASTM2040 or SNELL rs98 (snow sports);
 - (iv) a reserve/emergency parachute attached appropriately to their harness; and
 - (v) radio set to our local safety frequency 145.9875 MHz.
 - (b) Pilots should consider carrying a position tracking device with SOS function.

1.17.3. International Paragliding Association (IPA)

The IPA was established as a non-profit organisation under Societies Ordinance in 2023. The Association promotes the sport of paragliding in Hong Kong and enhances members' knowledge in the use of paragliding equipment.

1.18. Additional Information

1.18.1. Harness

1.18.1.1. Constructions

- (1) A harness is essentially a supportive seat made from straps and fabric. It holds the pilots securely, whether they are sitting, lying back, or standing. The harness connects to the wing using two carabiners, or it can be directly attached via the wing's risers.
- (2) Most harnesses are designed as comfortable seats, allowing pilots to relax during long flights. However, lighter models made for hike-and-fly may be less comfortable and can be more like a climbing harness.
- (3) Nearly all harnesses include back protection for the pilots. In the event of a crash landing, this protector absorbs the impact to prevent or reduce injury.
- (4) An airbag is a lighter type of back protector. It inflates automatically after take-off, meaning it offers its full protection a few seconds after you launch. It is also common to find a combination of foam and an airbag. Some harnesses also have extra foam armour on the sides to protect the pilots' hips.
- (5) A certified harness is one that has been tested and meets the safety standard EN 1651:2018+A1:2020¹⁹ or LTF 91/09²⁰.

¹⁹ The current European standard is EN 1651:2018+A1:2020 (E) (Paragliding equipment - Harnesses - Safety requirements and strength tests). It is applicable only to harnesses for paragliders. The intermediate attachment system between the harness and the paraglider does not form part of this standard. It specifies safety requirements and test methods. The safety requirements include strength requirements, vertical impact pad test requirements, and emergency parachute deployment test requirements.

²⁰ The LTF 91/09 is a German safety standard for paragliding harnesses and back protectors, forming part of the broader LTF-2009 (Airworthiness Requirements for Hang Gliders and Paragliders) framework. It specifies rigorous testing protocols for structural strength, impact absorption, and overall safety compliance. Harnesses certified under LTF 91/09 must meet criteria for materials, construction, and performance under stress, ensuring pilot safety during flight and emergencies. This standard is widely recognised in competitive paragliding, particularly for FAI Category 1 events, where harnesses must comply with LTF 91/09 or equivalent standards like EN1651:2018.

1.18.2. Rapid Paragliding Descent Techniques

1.18.2.1. “Big Ears”

This is the common name given to the practice of deliberately collapsing the cells at the tips. A pilot pulls the relevant control lines to fold in both wing tips of a paraglider. As a result, the flying surface is reduced, and the drag of the wing and the sinking rate increase. It can be very useful indeed for combating strong lift and done at lower altitudes and without involving drifting downwind.



Figure 26: “Big Ears”

(Source: <https://flybubble.com/blog/how-to-do-big-ears-safely>)

1.18.2.2. B-line Stall

- (1) Some canopies can be made to sink very quickly in a stable state by pulling straight down slowly, evenly and symmetrically on the B-risers, which forms in a crease over the full span of the canopy. This disrupts the airflow over the wing, causing its airspeed to reduce drastically and lose height quickly.



Figure 27: B-line Stall

(Source: <https://www.youtube.com/shorts/6hvNnz218rg>)

- (2) A pilot can symmetrically tighten the B-line risers until the travel of the risers are mechanically restricted on the canopy of a BF X-wing paraglider. The canopy will be deformed along the span, lose the horizontal speed and increase the speed of descent. The decrease in horizontal speed can reach values of 7-8 m/s. The risers should never be released if the wing is vertically above the pilot.
- (3) To exit the B-line stall, the pilot can quickly and symmetrically release the straps of the B-riser and the crease disappears. The wing will return to a normal flight by itself with a slight pitch movement.
- (4) The OEM strongly recommends to avoid using B-line stall due to its light weight design.

1.18.2.3. Spiral Dives

- (1) A tight 360 turn is one where, from trim speed, a pilot weightshifts to one side, and then, as the glider starts to turn, he pulls more inner brake and accelerates into the turn quickly. The wing picks up airspeed fast and loses a lot of height. The descent rate is controlled by managing both inside and outside brakes. It is not advisable to make steep turns close to the hillside or low. To exit from a deep spiral he can smoothly release the inside brake and the paraglider will start its own exit.

- (2) A spiral dive is simply a series of tight 360° turns. It is an extremely effective way to lose height quickly but involves speed and G-force. It is very useful for combating strong lift. A spiral dive is induced by strongly depressing one control and raising the other, gradually steepening the turn until the pilot is swung out from the canopy which can eventually be at almost 90° to the ground.
- (3) A moderate spiral dive can achieve a descent rate at 10 m/s, and up to 15-20 m/s for a strong one. However, this is rarely a good technique of losing height in strong lift while staying in the same region of strong lift. As soon as a pilot stops spiralling, he will get lifted back up.

1.18.3. Speed System

- (1) A line runs from the A-risers through a series of pulleys to the speed bar attached to the bottom of pilot's harness. By putting his feet on this bar and slowly stretching his legs, the A-risers are pulled down by up to about 15cm, usually taking the B-risers and sometimes the C-risers down a bit as well. The effect is that the angle of incidence of the wing changes, and with it, the angle of attack and the glide angle: the wing points down a bit more, which increases the trim speed of the paraglider by a maximum of around 15km/h.

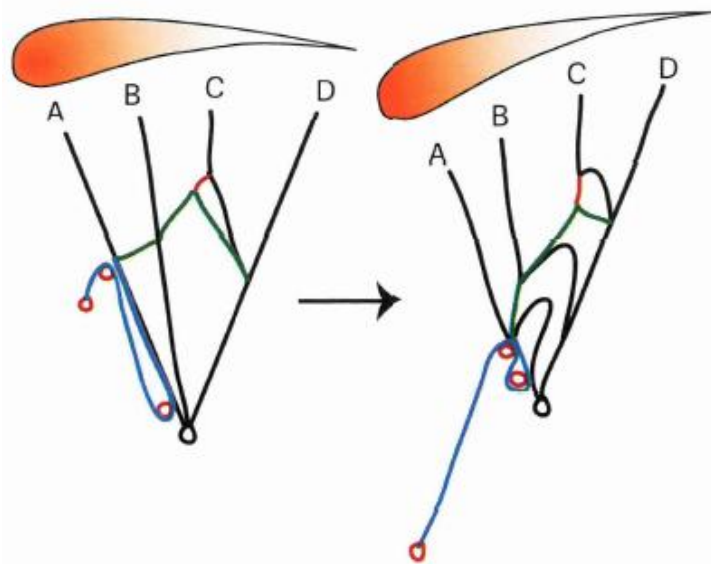


Figure 28: Speed System



Figure 29: Speed Bar

(Source: <https://ad-gliders.com/produkt/ultra-light-speedbar>)

- (2) When in "big ears" mode the wing loading, and the drag of the canopy is increased and therefore the wing is closer to the stall point. Applying speed bar in this situation can quickly induce a stall. For this reason, it is recommended that "big ears" are not activated when the speed system is extended.
- (3) The exception for most pilots is combining "big ears" with using the speed system, which is a useful and effective way to deal with strong lift or wind. If a pilot is caught by strong lift, it may be a better approach to use big big-ears and speed bar to fly away from the lift into less strong lift or even sinking air. Then, he flies tight 360s or a mild spiral to get down.
- (4) However, if a pilot applies "big ears" with his speed bar already extended, he runs a greatly increased risk of a tuck²¹, so it is important that he applies the "big ears" first and then speed bar. If he tried speed bar first, this means he needs to bend his knees and let it off for a few moments while he closes the "big ears" before reapplying pressure to the speed bar.

²¹ If too low an angle of attack of the wing is achieved, the soft aerofoil ceases to inflate properly and begins to deform, internal pressure drops, and as the cell entries cannot work and the load is removed from the front lines, the wing will collapse at the front. This is known as a "tuck" and is quite easy to bring about if the pilot is stationary on the ground.

1.18.4. Previous Paragliding Occurrences at Sunset Peak

1.18.4.1. Occurrence on 29 June 2015²²

A pilot launched from the take-off site of South Lantau East paragliding activities area in wind conditions only just within safe limits. The HKO recorded moderate south-south-westerly winds with stronger gusts. During his flight, a storm cloud rapidly approached. While manoeuvring to avoid another paraglider, he was engulfed. Violent lift threw him upwards; despite attempting a “big ears” descent, he remained out of control. He crashed near Sunset Peak’s summit, falling unconscious and sustaining injuries. Upon waking, he alerted others via radio and shared his GPS location. Low cloud prevented a GFS helicopter rescue, leading to a lengthy ground extraction. The incident occurred despite a forecast of generally fine weather, which had warned of the potential for intense, localized thunderstorms.

1.18.4.2. Occurrence on 22 July 2018.

A pilot made a launch from the take-off site of South Lantau East paragliding activities area and later went missing. Due to adverse weather, he was located on 27 July 2018 and certified dead after being conveyed to the hospital. This accident was investigated by the AAIA. The investigation found that this fatal accident was probably caused by loss of effective control of the paraglider under rapidly deteriorated weather conditions, resulted in an impact with the terrain that rendered multiple injuries to the Pilot. The AAIA issued Investigation Report AAIA-01-2022.

1.18.5. Tracking Devices and Transmission of Distress Position Signals

1.18.5.1. Satellite-based Tracking Devices

With a subscription of dedicated satellite, satellite messengers can provide tracking service with more comprehensive coverage in remote areas. They feature dedicated SOS functionality and either one-way or two-way messaging capabilities.



²² <https://www.hkpa.net/Safety-Reports>
<https://airtable.com/embed/appODSXsQpuKjriX9/shrwDcDPJcG11x3ve/tblCu6wCKiW7PHx4V>

Figure 30: Typical Satellite-based Tracking Devices

1.18.5.2. Cellular-based Tracking Devices

- (1) Compact tracking devices for outdoor sports are available on the market. They utilize technologies such as LTE-M²³, FLARM²⁴, and Bluetooth to conduct real-time tracking with reliable coverage and navigational features.
- (2) Data can be sent automatically almost real time to a remote live tracking server through the GSM network. Predefined messages can also be sent on demand to a server.
- (3) Pressing the dedicated SOS button will activate instant help request in case of emergency.



Figure 31: A Typical Cellular-based Portable Tracking Device

1.18.5.3. Tracking Mobile App “HKSOS”

- (1) This is a free mobile outdoor rescue app officially rolled out by the Hong Kong Police Force in January 2024. Its purpose is to enhance public safety and speed up rescue services in life-critical missions.

²³ LTE-M is a cellular network dedicated to the Internet of Things (IoT), with technology that has been standardised by the 3rd Generation Partnership Project (3GPP).

²⁴ FLARM (an acronym based on 'flight alarm') is the proprietary name for an electronic device which is in use as a means of alerting pilots of small aircraft, particularly gliders, to potential collisions with other aircraft which are similarly equipped. With a built-in FLARM, a pilot is informed of nearby air traffic in good time and warned of dangerous collisions.



Figure 32: HKSOS App

- (2) HKSOS is directly linked to the 999²⁵ Emergency Response Centre and with a built-in accident detection mechanism. It generates a unique SOS signal that can be picked up by search and rescue units with dedicated Signal Radar, even in extreme conditions without mobile network. When SOS is triggered via the app, the 999 Emergency Response Centre will be alerted and provided with the precise location information so that emergency teams can swiftly reach the person concerned for assistance.
- (3) HKSOS also incorporates RescueAI technology to enhance search and rescue by learning from various data points including hiking paths, walking speeds, terrain conditions, and geographical features to predict where a missing person may have gone.
- (4) When users encounter emergency situations, they can hit the SOS button in the app to trigger an immediate alert to the 999 Emergency Response Centre. The system also allows for emergency contacts of the users to trigger calls for help on behalf of users who may be unable to do so themselves.

²⁵ This is the emergency hotline for getting help from the Police, Fire Services Department or an ambulance in Hong Kong.

1.18.5.4. Tracking Mobile App “Enjoy Hiking”

- (1) The Agriculture, Fisheries and Conservation Department (AFCD) and the Communications Association of Hong Kong jointly developed a free mobile app called "Enjoy Hiking". Its purpose is to help locate walkers and speed up rescue operations.



Figure 33: Enjoy Hiking App

- (2) User location data will only be sent when mobile network or Wi-Fi coverage is available. If the “Hiker Tracking Service” and GPS of the mobile phone is activated before the trip, the system will automatically transmit the person’s tracking location and the data will be encrypted and stored at the system for 7 days, and erased automatically after 7 days if no incident is reported.
- (3) If the need arises, the stored data may then be retrieved to facilitate the rescue mission undertaken by the Hong Kong Police Force (HKPF) or the FSD.

1.19. Useful or Effective Investigation Techniques

Not applicable.

2. Safety Analysis

The Safety Analysis provides a detailed discussion of the safety factors identified during the investigation, providing the evidence required to establish the findings, causes, contributing factors and the safety recommendations.

2.1. Pilot Experience

- (1) The only flying records the investigation team could locate were those in the variometer data, which were 27.7 hours in 95 flights between July 2023 and June 2024.
- (2) The above-mentioned variometer data indicated that he had conducted 6 flights at South Lantau East and 12 at South Lantau West. It is considered that he was familiar with the terrain and the characteristics of the general weather conditions there.
- (3) Based on the limited information, it is unable to determine whether his experience was sufficient to operate an EN-C paraglider, which was designed for pilots who are Advanced Pilot rated, have several hundred hours logged (many of these in thermic conditions), have completed SIV courses, are flying 10 or more hours a month, and enjoy dealing with large asymmetric collapses, etc.

2.2. Weather

2.2.1. General Weather Forecast on Day of the Accident

- (1) The forecast indicated that there would be isolated thunderstorms within 100 km of Hong Kong. These storms would be associated with cumulonimbus clouds, which are tall, dense clouds that produce severe weather.
- (2) A southerly airstream was affecting the coastal areas of Guangdong.
- (3) There would be sunny periods during the day with a few showers and isolated thunderstorms.
- (4) The further outlook predicted that the winds would be moderate to fresh south to south-westerly. It would be mainly cloudy with a few showers and isolated thunderstorms.

2.2.2. Wind

2.2.2.1. Forecast of Wind Speed and Direction

- (1) The forecast surface wind would be 10-15 knots (kt) (19-28 km/h, Force 3 to 4) from the south/south west direction, and temporarily variable directions at 15 kt (28 km/h, Force 4) gusting to 25 kt (46 km/h, Force 6) in thunderstorms.
- (2) The wind at 2,000 ft (610 m) would be 15-20 kt (28-37 km/h, Force 4 to 5) from the south/south west direction.

2.2.2.2. Recorded Wind Data (CCH)

- (1) According to the recorded wind data between 1330 to 1530 hrs from CCH automatic weather station, the mean 10-minute mean wind speeds were 22 to 28 km/h (equivalent to wind force 4, moderate). The wind was blowing from the south (S, 180 to 190 degrees). The 10-minute maximum gust was 28 to 38 km/h (equivalent to wind force 4 to 5, moderate to fresh).
- (2) The flyable wind conditions in the HKPA site guides of South Lantau East (Sunset Peak) states that the wind direction should be South (S-SE), the wind speed should be force 2-3 as measured at CCH automatic weather station, and a paraglider should never take off in force 5 or above.

2.2.2.3. Observation of Wind in the Video

The video of the accident flight revealed that the Pilot struggled to stabilise his paraglider on the ground in a windy condition before take-off. His paraglider was lifted off from the ground while his back was still facing Cheung Sha Beach. He managed to turn his body to face forward shortly after take-off ((b) - (d) in Figure 1).

2.2.2.4. Flyability Based on Wind Forecast and Recorded Wind Data

Based on the above-mentioned forecast, recorded data, observation in the video, and the results of comparison with the HKPA guides for this site (para. 1.7.1), it can be concluded that the wind speed was not favourable for paragliding between 1330 to 1530 hrs on that day.

2.2.3. Cloud Base

2.2.3.1. Forecast of Cloud above Mean Sea Level, Visibility, and Thunderstorm

- (1) The forecast predicted 1 to 2 oktas of cloud cover (1/8 to 2/8 of the sky) at 1,000 feet, increasing to 3 to 4 oktas at 2,000 feet. There would also

be occasional cumulonimbus clouds: 1 to 2 oktas at 800 feet, 3 to 4 oktas at 1,500 feet, and 5 to 7 oktas at 4,000 feet.

- (2) The visibility was 10 km but could drop to temporarily 4 km in showers, and 2 km in thunderstorms.
- (3) It was also predicted that there would be moderate to severe turbulence near cumulonimbus clouds/thunderstorms, and moderate turbulence offshore and near hills.

2.2.3.2. HKO Tephigram at 0800 Hrs

The HKO tephigram in Figure 14 at 0800 hrs on the day of the accident showed that the dew temperature (red line) and the air temperature (black line) were equal at a height of about 800 m. This indicated that cloud would be formed at about this level. It provided a good reference for the possible cloud formation at Sunset Peak.

2.2.3.3. CCTV Photo of Lantau

According to the CCTV photo of Lantau (covering Sunset Peak) taken at Cheung Chau automatic weather station (looking towards the northwest) at 1430 hrs on the accident day, Sunset Peak was covered by cloud. The real time photo is accessible on the HKO website.

2.2.3.4. Airspace Restrictions

- (1) The special requirement for meteorological conditions for this site laid down by the HKPA is *“DO NOT Enter Cloud on this site. There are Aircraft nearby.”*
- (2) South Lantau East paragliding activities area is within the CTR Lantau Zone (Lantau Control Zone) which is a Class C airspace.

2.2.3.5. Observation of Cloud in the Video

The video of the early part of the accident also revealed that the take-off site at Sunset Peak was misty when the paraglider took off ((b) and (c) in Figure 1). In comparison with a photo of the surrounding area in a sunny day, the visibility was poor at the time the paraglider took off.



Figure 34: The Take-off Site on a Sunny Day

2.2.3.6. Flyability Based on Cloud Base

It can be concluded that the take-off site was covered by cloud and not favourable to paragliding at the time of the accident.

2.3. Line Check Results

- (1) According to the line check results, the line differences at the wing's C row shortened slightly. This was normal and no immediate action on the lines was required. According to the OEM, the solution is to put longer soft links (+2 cm) on the C row to compensate for the shrinkage of the C row.
- (2) Therefore, the slight shortening of the C row lines was not a contributing factor to this accident.

2.4. Data Recorded by the Variometer

- (1) According to the User Guide of the variometer, the recording start can be triggered automatically when changes of ground speed or vertical speed are detected, or manually. The first recorded data seemed being aligned with the take-off site in Figure 35, but it was actually some 10m higher than the ground level of the take-off site and 20m away from it. It was possible that the recording of the accident flight was triggered automatically. If it was triggered manually, it could be due to the errors of the variometer.
- (2) In addition, the User Guide also states that when flying the variometer will automatically stop recording data if neither a ground speed nor a vertical

speed is detected. It was possible that at the final few seconds of the recording, the airspeed of the paraglider was the same as the wind speed but in opposite directions, resulting in a zero ground speed.

2.5. Flight Path Analysis

2.5.1. General Review

- (1) The IGC data of the flight was recorded from 1431:41 hrs to 1436:53 hrs and the duration was 5 minutes and 12 seconds. It can be seen in the following plot that the flying altitude was increasing at an average rate of climb of about 0.77 m/s.
- (2) Between 1431:41 hrs and 1434:26 hrs, the paraglider had a flight trajectory to Cheung Sha Beach. After that, the paraglider changed heading towards the north direction and the hillslope. The differences between the flying altitude and the ground level kept decreasing.
- (3) The flying altitude and the ground level data did not merge at the last point of recording. It was because the variometer stopped recording data in the mid-air²⁶.

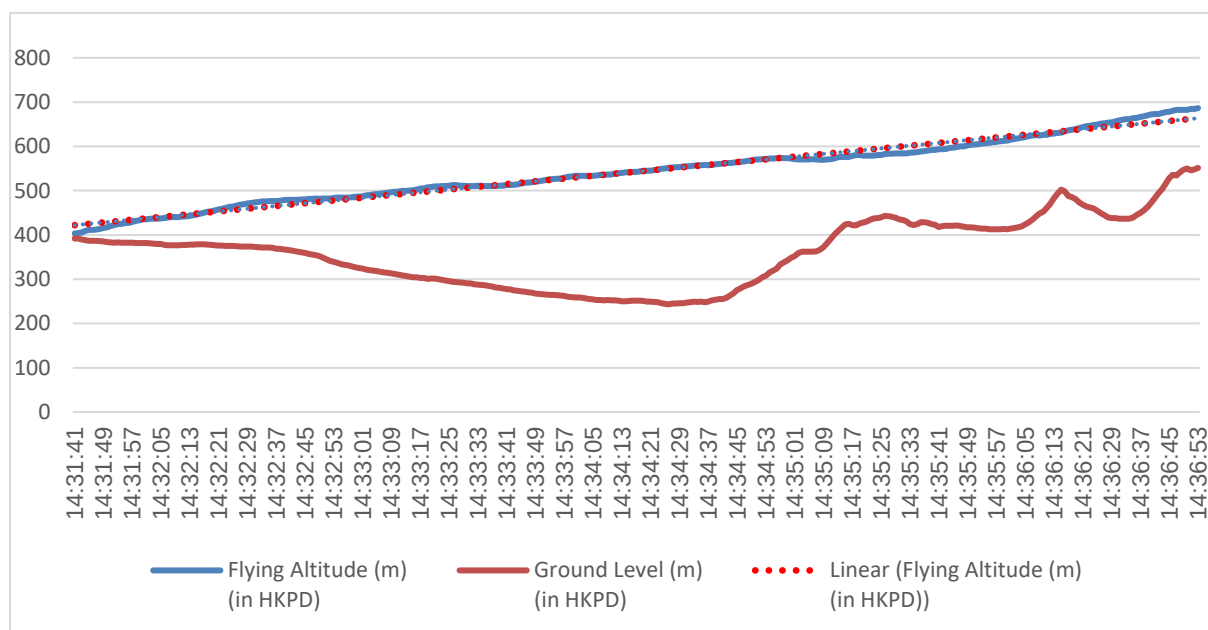


Figure 35: Flying Altitude and Ground Level

²⁶ HKPD in Figure 34 stands for Hong Kong Principal Datum.

2.5.2. Analysis of the Flight Path

- (1) With the request from the AAIA, the Lands Department reconstructed the following flight path with the IGC data of the accident flight. The flight path was within the South Lantau East paragliding activities area as defined in AIP HK at the time of the accident flight.

Note: The reconstruction of the accident flight path may not reflect the actual heading as the data in the IGC file did not record it.

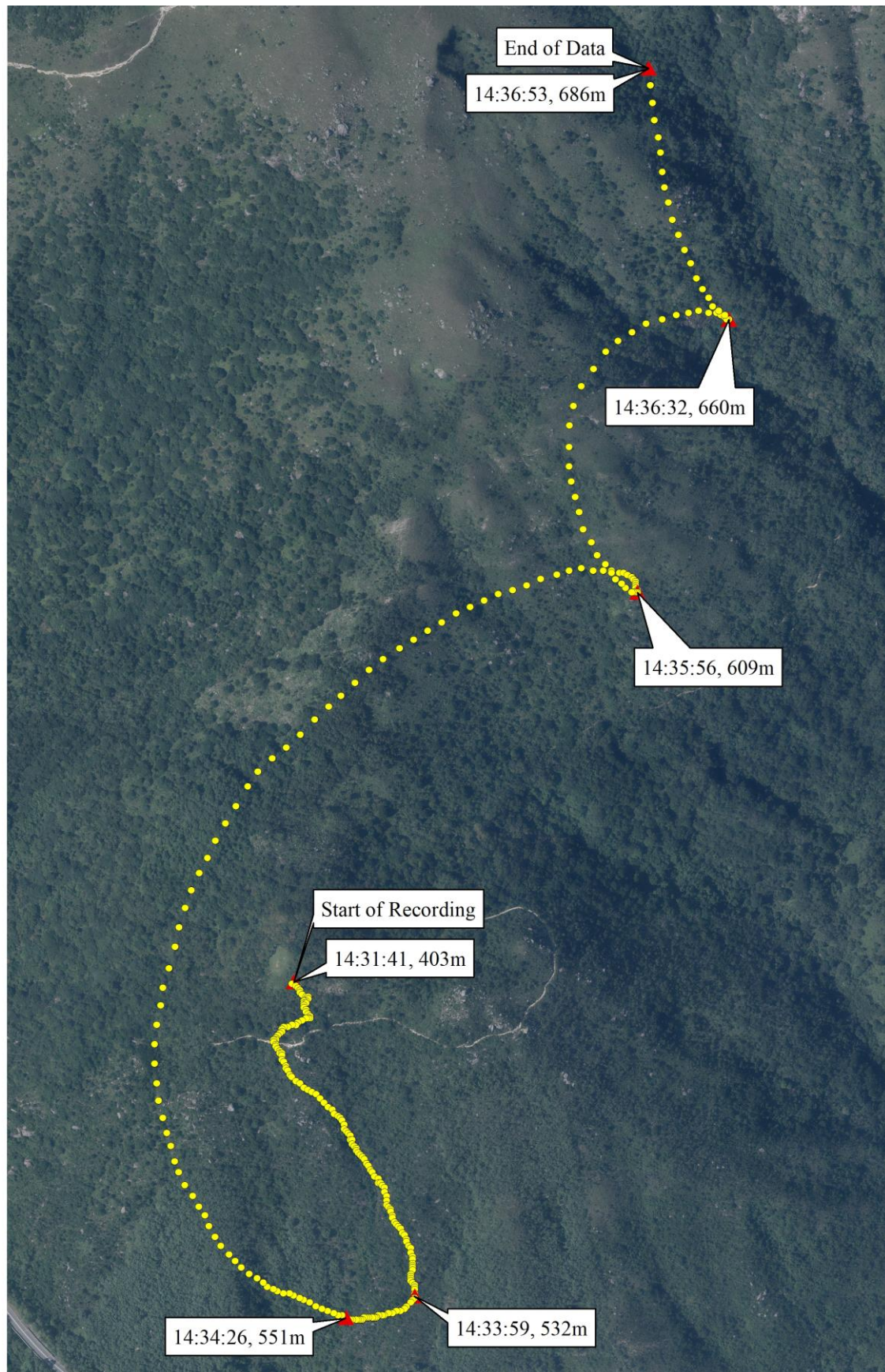


Figure 36: Path of the Accident Flight

- (2) It could be seen from the first part of the flight (1431:41 hrs to 1433:59 hrs) that the paraglider headed straight to Cheung Sha Beach as he previously agreed with his companions. However, the flying altitude increased slowly instead of decreasing.
- (3) The Pilot's companions reminded him on radio to apply "big ears" (refer to paragraph 1.18.2.1) and speedbar (refer to paragraph 1.18.3). Their intentions were to advise the Pilot to combat the strong lift and counteract the rate of climb by applying "big ears" and use the speedbar to accelerate probably with a hope for him to fly out of the cloud and regain good visibility of Cheung Sha Beach.
- (4) Between 1433:59 hrs and 1434:26 hrs, the paraglider made a turn towards the west and kept ascending. The wind condition (direction and speed) at this moment were basically the same as that in the beginning of the flight. It was likely that the Pilot no longer had Cheung Sha Beach visual and was disoriented in the air. He could be trying to maintain a straight trajectory towards the beach but indeed gradually turning to the right under his control. In this situation, the compass and the variometer would no longer be able to provide navigation information effectively.
- (5) After 1434:26 hrs, the paraglider made further right turn and flew towards the hilltop in a north-northeasterly direction. It made two abrupt 180 degree right turns at 1435:56 hrs and 1436:32 hrs. It was possible that there was a partial collapse on the right side of the canopy which resulted in a rapid change of flying direction during the asymmetric wing flying. It could not be determined whether the Pilot had attempted the rapid descent techniques ("big ears", B-line stall, and spiral dive) in a possible loss of situational awareness.
- (6) The variometer data recording ended at 1436:53 hrs at a flying altitude of 686 m while the corresponding ground level was 551 m. This indicates that this was not the point of collision with the terrain.
- (7) The Pilot eventually collided with the terrain. Rescuers managed to locate him on a slope near Sunset Peak, about 100 meters away from Distance Post L015 of Lantau Trail Section 2 at approximately 2125 hours.
- (8) In summary, the paraglider was in the cloud during the flight and kept ascending due to strong lift. The Pilot would have no visual reference to the ground surface and was unable to maintain effective control of the paraglider under low visibility.

2.6. Survivability

2.6.1. Analysis of Fatal Injuries

The cause of death as shown by the autopsy appeared to be multiple injuries. The pattern of injuries was consistent with those caused by blunt force impacts against hard object or surface, such as the terrain.

2.6.2. Search and Rescue

- (1) The joint-departmental search and rescue operations were thwarted by the poor visibility and rain resulting from the low cloud base prevailed on the day. The location of the Pilot was undetermined in the absence of distress call or signal. He was eventually recovered by the rescue team at 2125 hours on the same day of the occurrence.
- (2) The investigation team noted the benefits of employing tracking devices and means of transmitting distress position signals as described in paragraph 1.18.5, which may potentially shorten the time required by the SAR personnel to locate a missing person in adverse weather conditions.

2.6.3. Survival Aspects

2.6.3.1. Tracking Device, Service, and App for Paragliding Pilots

- (1) The AAIA already highlighted in Investigation Report 01-2022²⁷ that a position tracking device, service, and app, that can send out and share the real-time location information of a paragliding pilot or a distress signal inflight to alert the SAR units, is considered essential for improving emergency response capabilities and enhancing the safety of paragliding activities.
- (2) There are some tracking devices, services and apps described in paragraph 1.18.5, namely satellite-based tracking devices, cellular-based tracking devices, HKSOS app, and Enjoy Hiking app. They serve as a critical safety net by providing precise location data when pilots are injured, disoriented, or unable to communicate through conventional means.
- (3) By publishing safety guidance and notice on their websites respectively, the CAD and the HKPA recommend paragliding pilots to carry a position tracking device that would send out distress position signals or use

²⁷ https://www.tlb.gov.hk/aaia/doc/Investigation%20Report%20001_2022.pdf

applications services or applications that would share their real-time location information.

- (4) Paraglider pilots should make use of one or more of the tracking devices, services, and applications to ensure that their locations and distress signals can be promptly transmitted to the SAR units so that the rescue effectiveness by providing rescuers can be significantly improved.

2.6.3.2. Harness

- (1) Since the Pilot's harness did not have any certification, its compliance with the safety standard EN 1651:2018+A1:2020 or LTF 91/09 could not be determined.
- (2) Paragliding harness certification serves as a critical safety benchmark that indicates a harness's protective capabilities and structural integrity under standardized testing conditions. Unlike paraglider wings, harness certification focuses primarily on impact protection and structural strength rather than flight characteristics.
- (3) Paragliding harness certification is mandatory for FAI²⁸ Category 1 competitions. For recreational flying, paragliding harness certification requirements vary significantly across countries and territories, with some of them mandating specific standards while others, like Hong Kong, rely on pilot discretion.
- (4) Paragliding harness certification serves as a baseline safety information that indicates a harness's protective capabilities and structural integrity during a hard or crash landing under standardized testing conditions. Recreational flying pilots using non-certified harness should properly manage the risk.

2.6.3.3. Reserve Parachute

- (1) A reserve parachute was properly installed in the harness of the Pilot, but it was not used in this accident.
- (2) A paraglider pilot should throw his reserve parachute in emergencies such as mid-air collisions, an unrecoverable situation like having a cravatte or collapse followed by auto-rotation with twisted risers, an uncontrolled high-G situation.

²⁸ The Fédération Aéronautique Internationale, FAI - The World Air Sports Federation (FAI) is a non-governmental and non-profit-making international organisation. It establishes rules for air sporting events and generally oversees air sports activities, including paragliding.

- (3) The Pilot was possibly still trying to control the paraglider, fly out of the cloud, and regain visual contact with some reference terrains or Cheung Sha Beach. Due to loss of situational awareness and visual reference, he opted for not throwing his reserve parachute.
- (4) In the AAIA Investigation Report IVR-2025-04²⁹ published on 2 May 2025, the following Safety Recommendation was made:

Safety Recommendation SR-2024-08

It is recommended that the Hong Kong China Paragliding Association (HKPA) and the International Paragliding Association (IPA) to enhance the guidance promulgated to the paragliding community, encouraging paragliding pilots to make use of their reserve parachute during emergency situations.

2.7. Lessons Learnt from Previous Accidents

As mentioned in paragraph 1.18.4, there have been at least two more paragliding accidents occurred at Sunset Peak. The commonality of them was rapid changing weather, and probably causing pilots flying in cloud and losing situation awareness. As a result, the paragliders flew towards the terrain under strong wind conditions and impacted the terrain, and the pilots were seriously or fatally injured.

2.8. Pilot's Risk Management

- (1) Paragliding is an activity that offers significant rewards in terms of pleasure and experience, but it is inherently coupled with risks. Effective risk management is therefore not about eliminating risk entirely, which is impossible, but about keeping it "within acceptable limits" to avoid accidents. The central theme is that safety is achieved through a conscious and continuous balancing act, where the benefits of flying are weighed against managed and minimised dangers.
- (2) This balance is cultivated through a proactive "safety culture." This culture is defined by how pilots think about, discuss, and integrate safety into every aspect of their flying. It requires that everyone understands their role in safety management, a systematic process involving hazard identification, risk recognition, safety training and promotion, and learning from past events. The understanding that accidents are rarely caused by a single failure, but by a "confluence of multiple events," reinforces the need for vigilance across all areas.

²⁹ The report was about an accident involving an Ozone Rush 6 paraglider with its pilot seriously injured at Pyramid Hill on 26 December 2022 (https://www.tlb.gov.hk/aaia/doc/Investigation_Report_IVR-2025-04.pdf).

- (3) A practical framework for this safety culture can be categorised into three key areas: Preparation, Practice, and Prevention³⁰.
- (4) Preparation involves mitigating and reducing risks before reaching the launch site. This includes ensuring personal fitness, mental readiness, equipment checks (including its certification standards which provide baseline safety information), carrying tracking device and mobile app capable of transmitting distress position signals.
- (5) Practice is the ongoing development of skills, particularly in weather forecasting. Even on non-flying days, pilots should sharpen their forecasting abilities by using critical information, such as tephigrams and live CCTV photos of the paragliding areas, and the making of thorough risk assessment. Accurate assessment of conditions at the flying site, taking into considerations of past events, is the "single most important" part of the go/no-go decision.
- (6) Prevention is the active management of risk during a flight. This is where proactive thinking is vital. Techniques like the "15-Minute Rule" force a pilot to observe conditions objectively before launching. Once airborne, prevention means constantly monitoring for changes, having a Plan B, flying within boundary and operating altitude set out in the AIP HK, and making conservative decisions - such as landing early or even as soon as practicable - to maintain a "margin of safety" even if a decision proves to be a mistake.
- (7) The challenge for a paragliding pilot is not merely to follow rules, but to integrate this disciplined approach so thoroughly that it balances risk and reward and provides a safety buffer. The goal is to make the risks "as low as reasonably practical". True expertise in paragliding risk management lies in maximising the reward while systematically minimising the risk through preparation, practised skill, and proactive prevention.
- (8) The investigation team strongly advocates the need to re-emphasize the utmost importance of taking a thorough approach when conducting a risk comprehensive risk assessment to make the risks "as low as reasonably practical" to all participants of paragliding in Hong Kong through the HKPA and the IPA.

³⁰ The Three P's Preparation, Practice, Prevention, by Steve Roti, Hang Gliding & Paragliding (www.USHPA.aero)

3. Conclusions

3.1. Findings

From the evidence available, the following findings are made with respect to this occurrence. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

- (1) The Pilot had planned to land at Lower Cheung Sha Beach, but his paraglider was slowly lifted up towards the cloud by the wind after he had flown for a short while. [1.1 (2)]
- (2) The wind kept blowing, and the Pilot's paraglider ascended further. Eventually, his companions lost visual contact with it. [1.1 (3)]
- (3) At around 1500 hours, the Pilot advised his companions on the radio that he was stuck in a tree and had sustained injuries. He could not send out his location because he could not reach his mobile phone. After a while, he stopped responding. [1.1 (4)]
- (4) The Pilot was located by the rescuers at approximately 2125 hours. He was unconscious and still strapped in his paraglider. [1.1 (6)]
- (5) The Pilot had USHAP P2 Novice Pilot rating but the membership status was unknown. He also had HKPA 3 rating but his membership had expired. (1.5.1)
- (6) The data between 1330 to 1530 hrs from Cheung Chau automatic weather station indicated that the mean 10-minute mean wind speeds were 22 to 28 km/h (equivalent to wind force 4, moderate). The wind was blowing from the south (S, 180 to 190 degrees). The 10-minute maximum gust was 28 to 38 km/h (equivalent to wind force 4 to 5, moderate to fresh). [1.7.2.4 (3)]
- (7) According to the weather photo taken at Cheung Chau station (looking towards the northwest) at 1430 hrs of 17 June 2024, the hill top of Sunset Peak was fully covered by cloud. [1.7.2.5 (2)]
- (8) According to the interview statement of one of the Pilot's companions, when they arrived at the take-off site of South Lantau East, the fog was cleared. The cloud base was not too low. They could see the Lower Cheung Sha Beach (the landing field). (1.7.2.6)

- (9) The data in the Pilot's variometer was downloaded successfully for flight track analysis. The data covered a total of 27.7 flying hours in 95 flights, including the accident flight, between July 2023 and June 2024. The flights included 57 at Ma On Shan, 11 at Shek O, 6 at South Lantau East, 12 at South Lantau West, and 9 overseas. [1.11.1 (7) and (8)]
- (10) Based on the limited information, it is unable to determine whether the Pilot's experience was sufficient to operate an EN-C paraglider. [2.1 (3)]
- (11) Based on the above-mentioned forecast, recorded data, observation in the video, and the results of comparison with the HKPA guides for this site, it can be concluded that the wind speed was not favourable for paragliding between 1330 to 1530 hrs on that day. (2.2.2.4)
- (12) The IGC data of the flight indicated that the flying altitude of the paraglider was increasing at an average rate of climb of about 0.77 m/s. [2.5.1 (1)]
- (13) The Pilot eventually collided with the terrain. Rescuers managed to locate him on a slope near Sunset Peak, about 100 meters away from Distance Post L015 of Lantau Trail Section 2 at approximately 2125 hours. [2.5.2 (7)]
- (14) The paraglider was in the cloud during the flight and kept ascending due to strong lift. The Pilot would have no visual reference to the ground surface and was unable to maintain effective control of the paraglider under low visibility. [2.5.2 (8)]
- (15) The cause of death as shown by the autopsy appeared to be multiple injuries. The pattern of injuries was consistent with those caused by blunt force impacts against hard object or surface, such as the terrain. (2.6.1)
- (16) There were at least two paragliding accidents occurred at Sunset Peak. The commonalities of those two accidents and this one were rapid changing weather, and probably causing pilots flying in cloud and losing situation awareness. (2.7)
- (17) The central theme of risk management in paragliding activity is that safety is achieved through a conscious and continuous balancing act, where the benefits of flying are weighed against managed and minimised dangers. [2.8 (1)]
- (18) The investigation team strongly advocates the need to re-emphasize the utmost importance of taking a thorough approach when conducting a risk comprehensive risk assessment to make the risks as low as reasonably practical to all participants of paragliding in Hong Kong through the HKPA and the IPA. [2.8 (8)]

3.2. Cause

The accident was probably caused by loss of effective pilot control of the paraglider under strong lift and in cloud. As a result, the Pilot collided with the terrain that rendered multiple injuries to the Pilot. [3.1 (13), (14), and (15)]

4. Safety Recommendations

4.1. Safety Recommendation SR-2026-03

It is recommended that the Hong Kong China Paragliding Association (HKPA) and the International Paragliding Association (IPA) re-emphasize the utmost importance of taking a thorough approach when conducting a comprehensive risk assessment to make the risks as low as reasonably practical to all participants of paragliding in Hong Kong. [3.1 (18)]

Safety Recommendation Owner: The Hong Kong China Paragliding Association; the International Paragliding Association

5. General Details

5.1. Occurrence Details

Date and time:	17 June 2024 at around 1436 hrs
Occurrence category:	Accident
Primary occurrence type:	Collision with Obstacle(s) during Take-off and Landing (CTOL)
Location:	Sunset Peak, Lantau, Hong Kong
Position:	At a slope about 100 meters away from Distance Post L015 of Lantau Trail Section 2

5.2. Pilot Details

Licence details:	USHPA P2 Novice Pilot (current membership status unknown) HKPA 3 (membership expired)
Flying experience:	27.7 flying hours in 95 flights between July 2023 and June 2024, as recorded in the Pilot's variometer

5.3. Aircraft Details

Manufacturer and model:	BogdanFly X-wing Paraglider, Small Size	
Serial number:	026-S-10-2023-BL-Y-W	
Year of Manufacture:	2023	
Type of Operation:	Private	
Departure:	Take-off Site of South Lantau East Paragliding Activities Area, Hong Kong	
Destination:	Lower Cheung Sha Beach, Lantau, Hong Kong	
Persons on board:	Pilot – 1	Passengers – 0
Fatalities:	1	
Injuries:	0	
Aircraft damage:	Minor Damage	

6. Abbreviations

AAIA	Air Accident Investigation Authority
AGL	Above ground level
AIP HK	Aeronautical Information Publication Hong Kong
AMSL	Above Mean Sea Level
APRS	Automatic Packet Reporting System
BHPA	British Hang Gliding & Paragliding Association
BLE	Bluetooth Low Energy
CAD	Civil Aviation Department
CAD Safety Guidance	CAD Safety Guidance on Paragliding Activities
Cap. 448B	Hong Kong Civil Aviation (Investigation of Accidents) Regulations
CAPPI	Constant Altitude Plan Position Indicator
CAS	Civil Aid Service
CCH	Cheung Chau
CTR	Control zone
EMSD	Electrical and Mechanical Services Department
EN	European Norm
FAI	The Fédération Aéronautique Internationale, FAI - The World Air Sports Federation
GFS	Government Flying Service
GPS	Global Positioning System
GWIN	Government-Wide IoT Network
HKFSD	Hong Kong Fire Services Department
HKO	Hong Kong Observatory
HKPA	Hong Kong China Paragliding Association
HKPF	Hong Kong Police Force
hrs	Hours

IGC	International Gliding Community
IoT	Internet of Things
IPA	International Paragliding Association
km	Kilometre
km/h	Kilometres per hour
kt	Knot
LH	Left-hand
LoRa	Long Range
LoRaWAN	Long-Range Wide Area Network
m	Metre
min	Minute
PYNEH	Pamela Youde Nethersole Eastern Hospital
RH	Right-hand
SF&OC	Sports Federation & Olympic Committee of Hong Kong, China
SFC	Ground surface
UAS	Unmanned aerial systems
USHPA	United States Hang Gliding and Paragliding Association
UTC	Coordinated Universal Time

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