

Synopsis

The pilot of Grob Astir G-102 CS sailplane, registred HA-4518 arrived at Farkashegy airfield in order to practice flying. During the initial phase of the winch launch, the winch operator saw people walking towards the winch cable therefore he aborted the winch launch process. The pilot responded too late, and he was not able to accumulate sufficient speed for the landing already, which resulted in a hard landing. No one was injured in the incident, but the aircraft had minor damage.



Figure 1 – The aircraft after the occurrence

The Investigating Committee of Transportation Safety Bureau (hereafter referred to as ‘IC’) attributed the occurrence to human factors related to the pilot, and additionally, identified the wrong judgment of the situation by the winch operator and the people approaching the winch launch track as indirect causes.

The IC found no grounds to issue a safety recommendation.

Factual Information

Occurrence class:	Incident				
Date of occurrence:	12 September 2021, 12:15 LT ¹				
Location of occurrence:	Farkashegy airfield (LHFH)				
Aircraft make, model and registration:	Grob Astir CS, HA-4518				
Year of manufacture, serial number:	1976, 1269				
Purpose of flight:	Non-commercial (private, local)				
People		Crew	Passenger	Other	
	Number:	1	0	0	
	Injured:	None	-	-	
Damage to property:	Aircraft: minor 3rd party: None				
License and ratings of PIC:	SPL ²				
Age and citizenship of PIC:	17 years old, Hungarian				
Flight experience of PIC	Total	On the type	Last 90 days	Last 7 days	
	Flight hours:	82:58	21:53	19:44	0:01
	Number of take-offs:	223	22	20	1
Sources of information:	event report; site survey, witness interviews, security camera recording, meteorological data				

¹ Local Time

² Sailplane Pilot Licence

Flight History

The pilot, a member of the aero club involved, arrived at Farkashegy airfield in the morning intended to conduct a practice flying. He did the pre-flight check of the sailplane. On that day, the two gliding clubs using the airfield were operating with 7 sailplanes from common start place at RWY 15 (according to wind direction), also sharing the winch owned by the other sailing club. With time, the weak south-east wind turned north-westerly, therefore both clubs decided to use RWY 33. The process was performed by flights in weak tailwind. Prior to the take-off of HA-4518, the pilot encountered intense tailwind, which he reported to the winch launch manager who was standing by the sailplane at the start place, so they decided to wait. After a few minutes, the wind somewhat dropped therefore the pilot began his planned flight. The pilot was the last to take off from RWY 15. By that time, all other sailplanes had been either landed near the new start place at RWY 33, or still in the air.

The winch launch manager made a radio call to the winch operator to launch the glider. Before starting the process, the winch operator detected some people, who were involved in the flight operations (aero club members), near the winch launch track, north of the winch cable. The people were walking to a glider which had landed at the other side of the winch cable. Notwithstanding that, the winch operator started the winch launch process. A few seconds (7-8 sec.)³ after the start, he aborted the process because the people detected before had got even closer to the moving winch cable in the meantime.

According to the pilot's report, his lift-off was normal, and later on, he perceived a single inflation of the drogue chute of the winch cable, and then he continued his flight with a low angle of climb. He did not see any sign of a cable break or sudden loss of performance. Still not perceiving pulling force, he pushed on the stick, and released the winch cable, according to his report. During his interview, the pilot stated he had not been able to assess the altitude exactly during the recovery, but the airspeed indicator had shown a value over 60 km/h. During dive to increase the airspeed, the pilot could not reach proper airspeed for a normal landing, therefore he attempted to reduce his rate of descent by intensely pulling the control stick. As a result, the glider took a hard landing and re-bounced, then touched down again, and finally stopped after a lengthy landing roll.

After landing, the pilot complained of pain in his spine and chest, therefore the people arriving at the scene called the ambulance service at 12:31. The responding ambulance unit took the pilot to hospital with suspected spinal injury. The examinations revealed no injury to the pilot's organism in relation to the incident, therefore he was discharged to his home.

Occurrence Site and Aircraft Wreckage

Figure 1 depicts the aircraft's position after it stopped at the airstrip at Farkashegy airfield. The IC could not identify any ground marks related to the incident at the scene.

The IC obtained the important coordinates (Figure 2) at the scene as follows:

- the location of the winch apparatus and the people involved in the flight operations were determined (as points A and B in Figure 2) on the basis of the winch operator's report;
 - Point A: where the people involved in the flight operations were staying before start of the winch launch;
 - Point B: position of the same people when the winch launch was stopped;
- the starting and stopping points of the aircraft were determined using the OGN tracker⁴;
- the position of the aircraft as found during the incident site investigation (the same spot where the aircraft had come to rest after landing) was recorded.

According to the examination of the aircraft, the main frame of the fuselage was damaged: it buckled on both sides; no other damage was found on the aircraft, or on anything else at the scene.

³ The time between the tightening and slackening of the winch cable as shown in the security camera recording.

⁴ Open Glider Network – a GPS based system used in gliding, which records flight track and altitude data.

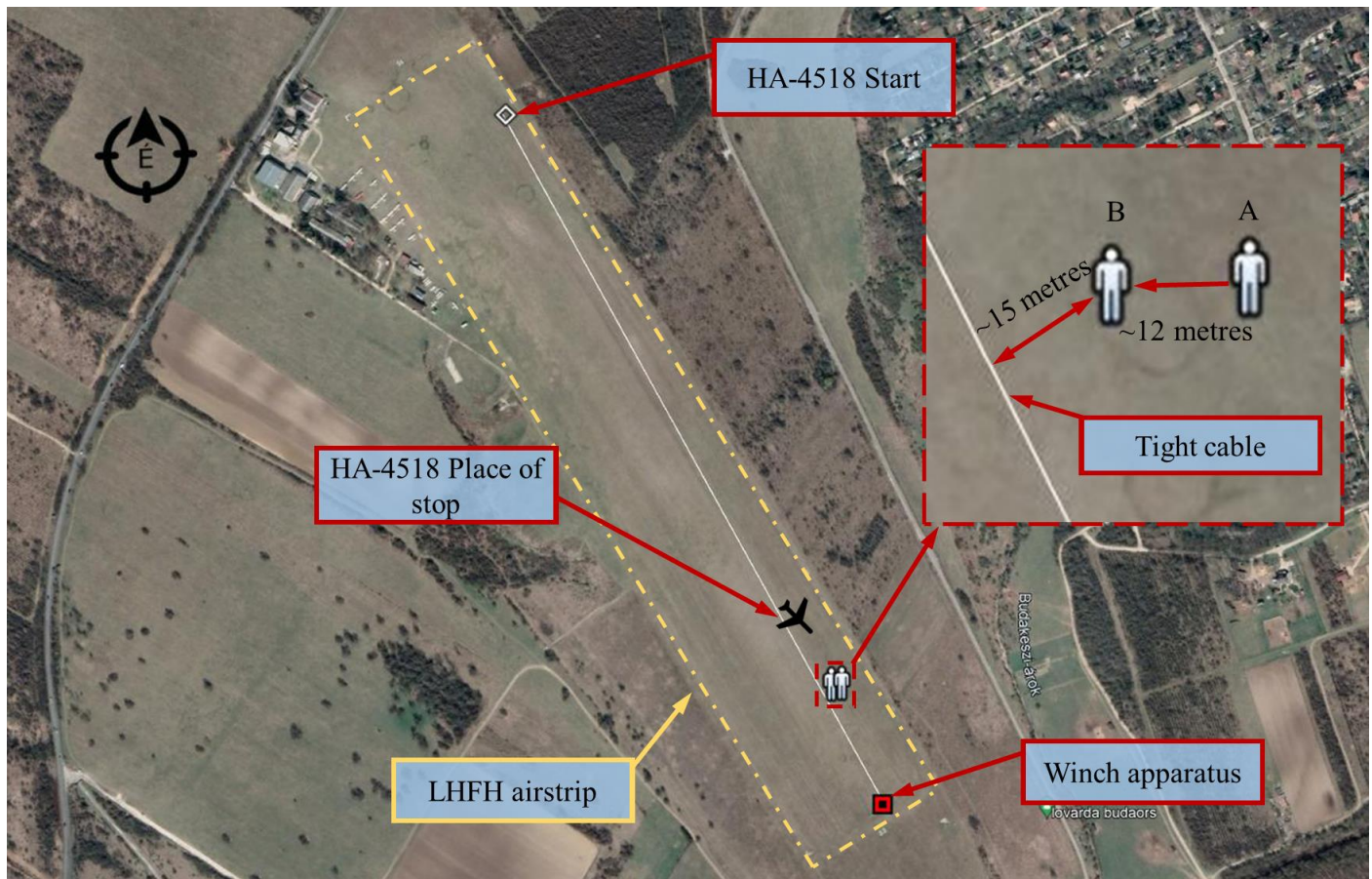


Figure 2: The scene of the incident

Flight Crew

The pilot had the required licences, ratings and practice for flying the sailplane. According to his statement, he felt fit for the flight and was relaxed (he had slept 8 to 9 hours), and there were no distractions to influence his flight. He had not flown for 1 month before the incident, so, according to his statement, he performed pre-flight checks of the aircraft even more carefully and thoroughly, however, he did not administrate the pre-flight check in the flight log.

According to the pilot, he had not had a real cable break before, but recently, – in July, 2021 – he had an automatic cable release at an altitude of 150 metres, and he solved the problem by applying the procedure for cable breaks. When he compared the two occurrences, he felt that this time his reaction was slower.

According to the pilot's logbook, he had a simulated cable break during check flights in March 2021. He had flown almost 22 hours from 22 take-offs with the aircraft type concerned.

Winch operator

The winch operator had a winch operating experience of over 15 years and had the licence required for operating the winch apparatus. At the time of the occurrence, a trainee winch operator was also participating in winch operation within an all-day training session. The trainee had not been licensed yet to operate the winch independently, therefore he only observed winch operation. They both noticed the people approaching the winch cable when the winch launch was started. According to their report, they attempted to warn the people approaching the danger zone of the winch launch, but without success, therefore the winch operator stopped winch operation after a few seconds. According to the winch operator, the danger zone of winch launch is the area covered by the straight lines projected from the line of the winch cable to the ground, in both directions, at an angle of 30°.

Aircraft

The sailplane (Grob G-102 Astir CS) involved in the occurrence was manufactured since 1970s, specifically for the practising of performance flying. The sailplane involved in the incident was found suitable for the planned flight and had the required documents. Its last annual maintenance took place at Farkashegy airfield in January 2021.

The safety investigation revealed no information relating to any failure of any structure or system of the aircraft before the incident and would thus have contributed to the occurrence or affected the course of events.

Weather and Visibility

On the day of the incident, the weather in Hungary was formed by an anticyclone bringing generally clear or slightly cloudy weather with no rains. The incident occurred around midday, in good visibility conditions; the sun was high in the sky therefore its light had no influence on the occurrence either.

The north or north-westerly wind was moderate or occasionally brisk in most of the country. According to data of Hungarian Meteorological Service recorded at János-hegy Station, Budapest, the wind blew from 86° at speeds of 3.5 - 3.2 m/s.

According to information available to the IC, the wind direction at Farkashegy airfield changed from south-easterly (2-3m/s) to north-northwesterly not long before the incident, and became briskier when thermals appeared. The weather conditions were suitable for soaring.

Communications

Communication between the people involved (pilot, winch launch manager, winch operator) took place at the radio frequency officially assigned to the airfield.

Aerodrome

The incident took place at the airstrip (grass, sized 1000x200 metres, orientation: 15/33) of Farkashegy airfield (LHFH), which is located 3 km south of Budakeszi town, at 215 m above sea level. A specific feature is that, due to a vertical curve in the airstrip, the start place and the winch operator located at the two ends of the airstrip cannot see each other. Within the scope of non-commercial operation, the traffic of the airfield is fairly complex: it is not only busy, but also characterised by different types of aircraft and different modes of take-off. The characteristics of the airfield had no direct effect on the occurrence.

Flight recorders

The aircraft involved in the incident was equipped with OGN tracker device, and a security camera system was at work at the airfield, and the IC obtained recordings from both systems during the investigation.

The IC made a series of images from the time-stamped frames of the security camera recording; it depicts the flight path of the aircraft well (Figure 3).

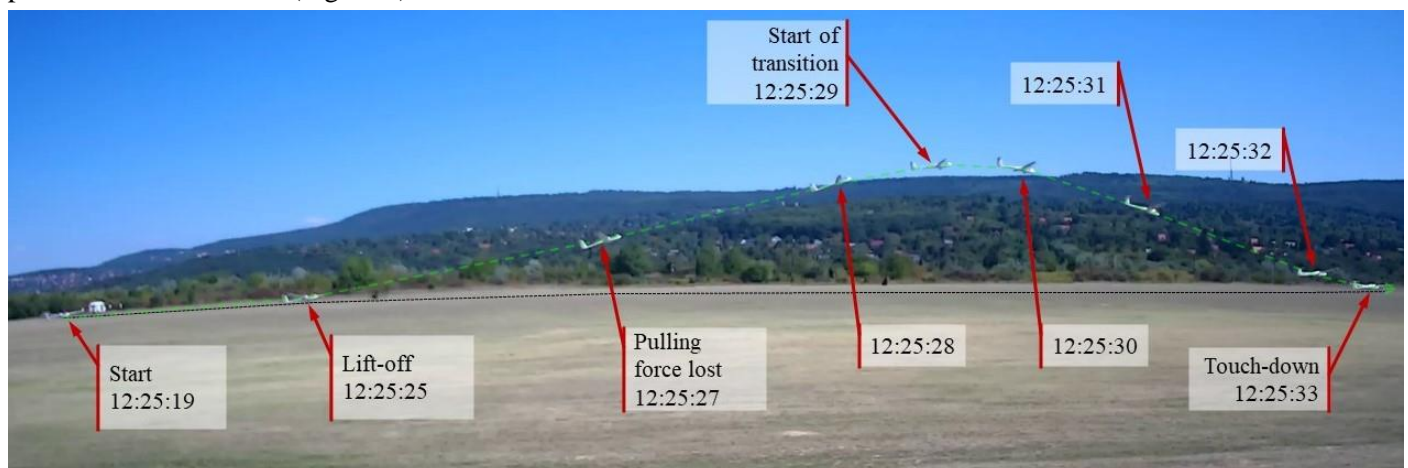


Figure 3 – The flight path of the aircraft (Source of picture: security camera recording)

Organisation

The training of sailplane pilots includes the procedure related to winch cable break and/or winch performance drop, which the student pilots acquire both in theory and in practice. It is an accepted practice at the aero club involved in the incident that student pilots as well as licensed pilots have to prove their skills within a check flight annually. In glider flying, a cable break is not regarded an emergency situation just a potential adverse circumstance for which the pilot must prepare before every take-off.

The organisation involved in the occurrence (hereinafter: “Organisation”) sent TSB the results of their internal investigation on 05 October 2021. In order to reduce identified risks, the Organisation intends to introduce, among others, a warning light mounted on the winch apparatus, and a change to the number of controlled cable break practice sessions for its less experienced pilots.

Winch cable

The elongation of the winch cable used on the day of the occurrence was different from the value the pilot had been used to. Therefore, the IC obtained elongation value data for the synthetic cable used at the time of the incident, as well as for the steel cable (to which the pilot had been used to) from the manufacturer. According to the information received, the elongation of the steel cable is 0.5%, while the elongation of the synthetic cable is 3.5%, i. e. the steel cable the pilot had been used to is more rigid than the synthetic cable used at the time of the incident.

Analysis

In general, one of the major signs of a winch cable break is that the aircraft begins an intense deceleration, which the pilot may realise primarily from a sudden drop of the pulling force. According to the pilot’s report, he perceived the pulling force drop and the inflation of the drogue chute, but he attributed those phenomena to changes in cable tightness due to elasticity of the cable, therefore, expecting the cable to tighten again, he did not respond to the pulling force loss immediately. The IC’s position is that the pilot’s reaction time was largely influenced by the discrepancy between his expectations relating to the winch activity and reality, which led to a delayed recognition of the situation. Elasticity of the winch cable used may lead to fluctuation of the cable force more easily, and accordingly, a pulling force loss may appear less obvious. Due to realising the loss of pulling force too late, the pilot got into a situation where he could not reach sufficient speed for proper landing even by diving for airspeed. An intensive pull of the control stick before touch-down proved to be a good solution to reduce vertical speed. Two other factors also contributed to the occurrence: the pilot had not flown for a month before the incident, and he had had relatively low level of experience (his pilot licence had been issued a year before), which makes it more difficult to manage an unexpected situation.

The winch launch manager staying at the initial start place (in accordance with the relevant rules) could not see the south-eastern end of the airstrip (new start place) because of the characteristics of the field. The IC found disorganisation in operation, which is supported by the fact that the club members participating in the ground movement of aircraft neglected some basic rules of the industry. Such disorganisation may also have contributed to the occurrence in the opinion of the IC.

The IC’s position is that people experienced in aviation may be expected to approach a landed aircraft carefully in the manoeuvring area of the airfield, pay attention to the winch cable as well.

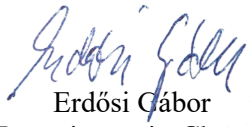
According to the IC’s experience, persistent deviation from the rules may sooner or later create situations where the likelihood of an accident may increase. Due to busy traffic and complexity of the airfield, its users are often pressed to maintain their chance of continuous flight activity at the cost of reducing the safety margin. Based on information gathered at the airfield and witness interviews, the IC holds the opinion that the people who were off to move a landed aircraft had already been staying within the safety zone of the winch when the winch operation started, therefore the IC found that it was risky to start a winch operation. The IC’s calculations based on data from the scene support that, as the distance between the people and the tight winch cable was about 10 to 15 metres when the winch operation was stopped. According to the IC’s assessment, a person walking at average speed covers 10 to 12 metres in 7 seconds.⁵ Accordingly, the people were 27 metres away from the winch cable as a maximum when the winch operation started, and it was within the danger zone described by the winch operator in his interview.

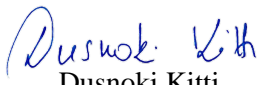
The winch operator had many years of experience and practice. Self-confidence arising from experience may increase the likelihood of an occurrence during an activity operated with reduced safety margin, which manifested in the reduction of the safety zone of the winch operation in this case. The IC’s position is that instructing the trainee winch operator may also have had an effect on the winch operator’s attention and decision making.

⁵ The time between the start of the sailplane and the inflation of the drogue chute was 7 seconds.

Conclusions

Pilots must be prepared for a winch cable break or sudden loss of the pulling force. The elasticity characteristics of the cable (its elasticity was different from what the pilot was used to) may have misled and delayed the pilot with situation recognition, therefore the IC attributes the direct cause of the incident to late situation recognition by the pilot. In addition, several factors also contributed to the incident. The IC identified the following indirect causes: starting winch operation in the given circumstances; the lack of situation recognition on the part of the people (with experience in aviation) entering the winch launch zone had significant effect on the occurrence.


Erdősi Gábor
Investigator-in-Charge


Dusnoki Kitti
IC Member

The sole objective of a safety investigation is to find the causes and circumstances of aviation accidents or incidents and to initiate the necessary safety measures; furthermore, to make recommendations in order to prevent similar cases in the future. It is not the objective of an investigation to apportion blame or liability.

General information

This investigation is carried out by Transportation Safety Bureau on the basis of the following legislation.

- Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC,
- Act XCVII of 1995 on aviation,
- Annex 13 identified in the Appendix of Act XLVI. of 2007 on the declaration of the annexes to the Convention on International Civil Aviation signed in Chicago on 7th December 1944,
- Act CLXXXIV of 2005 on the safety investigation of aviation, railway and marine accidents and incidents (referred to as *Kbvt.* throughout the document),
- NFM (Ministry for National Development) Regulation 70/2015 (XII.1) on safety investigation of aviation accidents and incidents, as well as on detailed investigation for operators,
- In matters not covered by *Kbvt.*, Act CL of 2016 on General Public Administration Procedures.

The competence of the Transportation Safety Bureau of Hungary is based on Government Regulation № 230/2016. (VII.29.) on the assignment of a transportation safety body and on the dissolution of Transportation Safety Bureau with legal succession.

Pursuant to the aforesaid legislation,

- Transportation Safety Bureau of Hungary shall investigate aviation accidents and serious incidents.
- Transportation Safety Bureau of Hungary may investigate aviation and incidents which – in its judgement – could have led to accidents of more severe consequences in different circumstances.
- Transportation Safety Bureau of Hungary is independent of any person or entity that may have interests in conflict with the objectives of the investigating body.
- In addition to the aforementioned legislation, TSB of Hungary shall conduct safety investigations in line with ICAO Docs 9756 and 6920 *Manual of Aircraft Accident Investigation*.
- This Report shall not be binding, nor shall an appeal be lodged against it.
- The original of this report was written in Hungarian.

No conflict of interest has been found between safety investigators of the IC. No investigator assigned to a safety investigation has been involved as an expert in any other procedure pertaining to the same case and shall not do so in the future.

The IC shall retain all data and information having come to their knowledge in the course of the safety investigation. Furthermore, the IC shall not be obliged to make such data and information available to other authorities, whose disclosure could have been legally refused by their original owner.

József Mezei, Investigator, left TSB Hungary during the investigation therefore Kitti Dusnoki, Investigator, was appointed as member of the IC on 01 03 2022.

Translation

This document is a translation from Hungarian. Although efforts have been made to provide a translation as accurate as possible, discrepancies may occur. In such eventuality, the Hungarian version shall prevail.