

# FINAL REPORT

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ACCIDENT2464/18



State Commission on Aircraft Accidents Investigation (PKBWL)

UL. CHAŁUBIŃSKIEGO 4/6, 00-928 WARSZAWA | EVENT NOTIFICATION + 48 500 233 233

# DRAFT FINAL REPORT

## ACCIDENT

OCCURRENCE NO– 2464/18

AIRCRAFT–glider, HPH 304 S Jet, D- KTGM

DATE AND PLACE OF OCCURRENCE

8 August 2018, Klików near Żagań, Poland



This Report is a document presenting the position of the State Commission on Aircraft Accidents Investigation concerning circumstances of the air occurrence, its causes and safety recommendations. The Report was drawn up on the basis of information available on the date of its completion.

The investigation may be reopened if new information becomes available or new investigation techniques are applied, which may affect the wording related to the causes, circumstances and safety recommendations contained in the Report.

Investigation into air the occurrence was carried out in accordance with the applicable international, European Union and domestic legal provisions for prevention purposes only. The investigation was carried out without application of the legal evidential procedure, applicable for proceedings of other authorities required to take action in connection with an air occurrence.

The Commission does not apportion blame or liability.

In accordance with Article 5 paragraph 6 of the Regulation (EU) No 996/2010 of the European Parliament and of the Council on the investigation and prevention of accidents and incidents in civil aviation [...] and Article 134 of the Act – Aviation Law, the wording used in this Report may not be considered as an indication of the guilty or responsible for the occurrence.

For the above reasons, any use of this Report for any purpose other than air accidents and incidents prevention can lead to wrong conclusions and interpretations.

This Report was drawn up in the Polish language. Other language versions may be drawn up for information purposes only.

**WARSAW 2020**

Occurrence reference number:	2464/18			
Type of occurrence:	ACCIDENT			
Date of occurrence:	8 August 2018			
Place of occurrence:	Klików near Żagań, Poland			
Type and model of aircraft:	Glider HPH 304 S Jet SHARK			
Registration marks:	D – KTGM			
Aircraft User/Operator:	Private			
Aircraft Commander:	SPL			
Number of victims/injuries:	Fatal	Serious	Minor	None
	1	-	-	-
Domestic and international authorities informed about the occurrence:	ULC, BFU			
Investigator-in-Charge:	Jacek Bogatko			
Investigating Authority:	Państwowa Komisja Badania Wypadków Lotniczych State Commission on Aircraft Accidents Investigation			
Accredited Representatives and their advisers:	ACCREP from BFU			
Investigation Team	Jacek Bogatko; Ireneusz Boczkowski			
Document containing results::	FINAL REPORT			
Safety recommendations:	NONE			
Recommendations addressees:	NOT APPLICABLE			
Investigation completed:	18 June 2020			

**1. Type of occurrence:**

ACCIDENT

**2. Investigating Authority:**

PKBWL

**3. Date and local time of the occurrence:**

8 August 2018, 14:20 hrs LMT

**4. Point of departure and point of intended landing:**

Departure: Reinsdorf (EDOD), Germany

**5. Place of occurrence:**

200m east of Klików near Żagań, Poland

**6. Type of operation:**

Cross country flight with declared distance triangle of 522 km

**7. Phase of flight:**

Attempt to gain height after starting jet engine at a very low altitude

**8. Flight conditions:**

VMC, daylight

**9. Weather factors:**

At the time of the accident over the town of Żagań located north-west of Klików at a distance of 18 km, a violent storm took place, which could have “shut off” thermal lifts in this area.

According to witnesses, at the time of the accident the sky above Klików village was cloudless and the weather was windless. The weather had no direct impact on the accident.

**10. Flight organizer:**

Private

**11. Aircraft commander data:**

A pilot, male, aged 64, a holder of:

- SPL – the license included ratings for aerotow and winch launch and to operate powered gliders;
- LAPL valid until 21/03/2020;
- Class 2 medical certificate valid until 21/03/2019.

Total flight time – 1121h 22 min including the last 10 flights (29.06.2018 - 08.08.2018) – 56 h 46 min.

## 12. Injuries to the crew:

As a result of the accident the pilot was killed at the scene.

## 13. Course and analysis of the occurrence:



Fig.1. HPH 304 S Jet Shark glider in flight [source: Internet – manufacturer website]

On 8 August 2018, the pilot of a HPH 304S Jet Shark glider with sustainer engine (Fig. 1) planned a flight along the 522 km cross-country triangle route with take-off from the first side of the triangle (declaration recorded in the IGC file recovered from the LX 9070 recorder, Fig. 2). The flight was without water ballast.

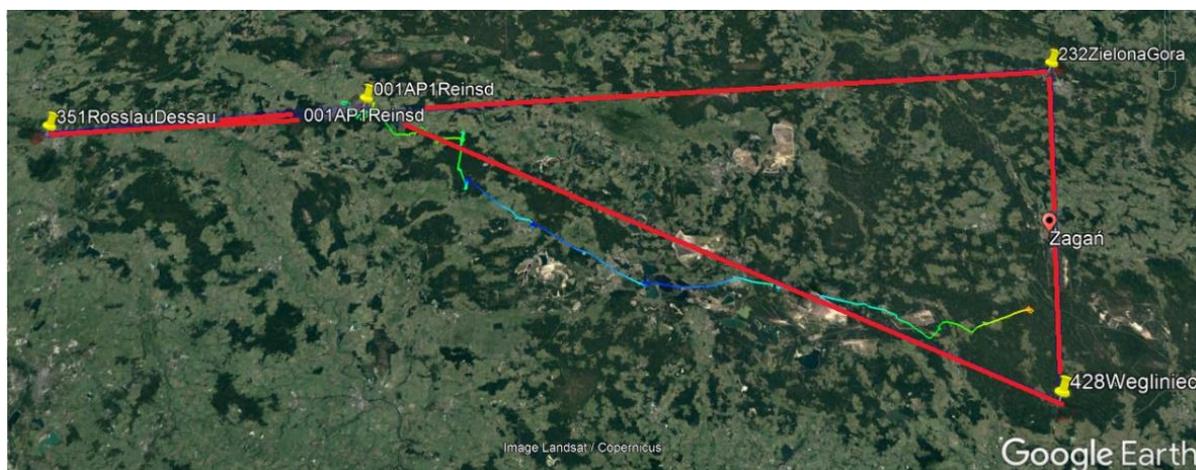


Fig.2. Declared flight route 522 km (red) and recorded flight route (blue and green) [source: PKBWL]

The winch launch was effected from Reinsdorf aerodrome (EDOD) at 11:48 hrs. After releasing at about 530 m AGL, the pilot gained about 900 m in height by circling in thermals around the aerodrome.

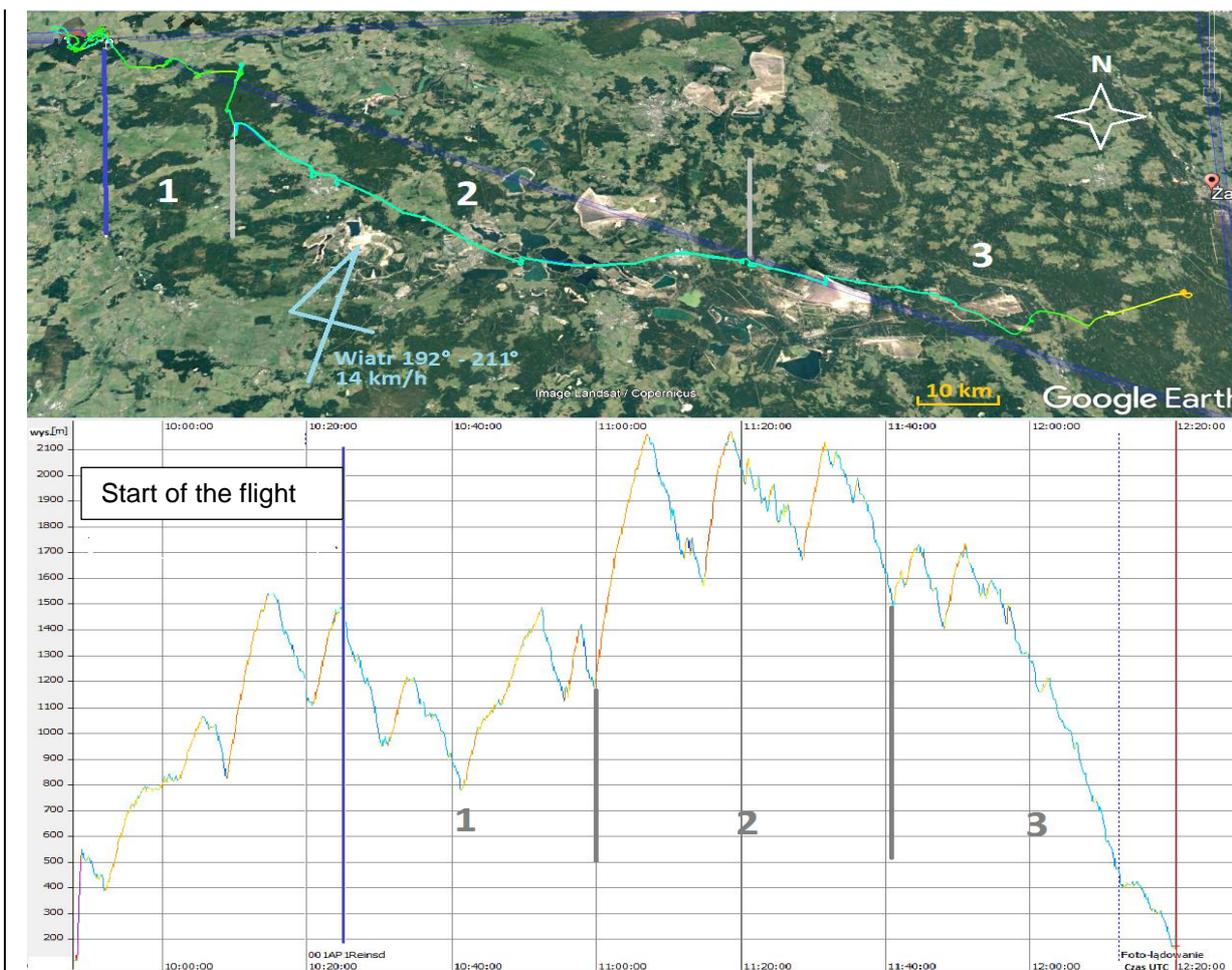


Fig. 3. Flight route and altitude derived from GPS recording [source: PKBWL]

The average value of thermal lifts during the flight was 1.3 m/s. The pilot started the flight at 12:25hrs LMT from a height of about 1450 m (the glider was south of the aerodrome – Fig. 3 – blue line). The initial section of the flight (Fig. 3 – 1) was performed in the range from about 780 to 1450 m.

In the fourth thermal column (Fig. 3 – section 2) the pilot started circling at an altitude of about 1200 m and the glider climbed to about 2150 m. The next two thermal columns were left by a glider at a similar altitude (probably it was the cloud base in this region). The next two thermal columns (Fig. 3 – section 3) were left by the glider at about 1,700 m (probably the cloud base have decreased).

Having gained altitude in the last thermal column the pilot turned to the east. The recording shows that the glider was flying over the terrain that should have been thermally active. However, the storm that took place over Żagań (18 km from the accident site, Fig. 4) around 13:00, in the SCAA opinion, suppressed the thermals in this area. As the recording shows, during 45 km flight, the pilot only once met a weak lift (up to 1 m/s), which he did not utilized. On this section of the route, at the flight altitude, the wind was blowing at a speed of 14 km/h from a direction of  $198 \div 222$  degrees.

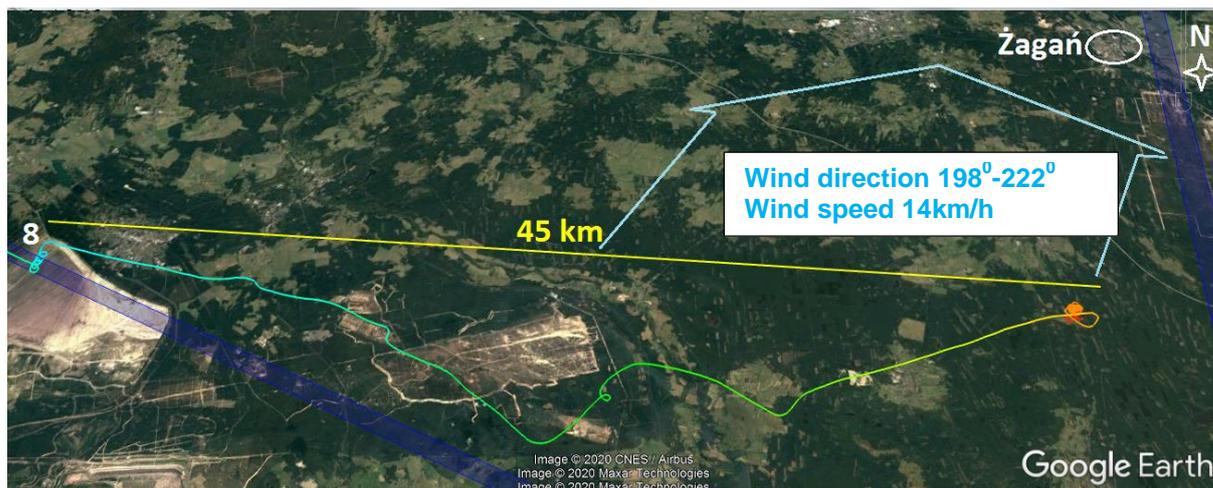


Fig. 4. Final portion of the flight [source: PKBWL].

At 14:12 hrs (Fig. 5) when the glider was in the vicinity of Klików about 260 m AGL, the pilot started circling in a "weak" thermal column. Unfortunately he was not able to gain altitude and after about 7 minutes about 81 m AGL, the pilot abandoned circling and probably began the procedure for starting the engine.

Analysis of the recordings allows to assume that the engine started operating at the moment when the glider began a right turn (as shown in Fig. 5) and was about 45 m AGL.

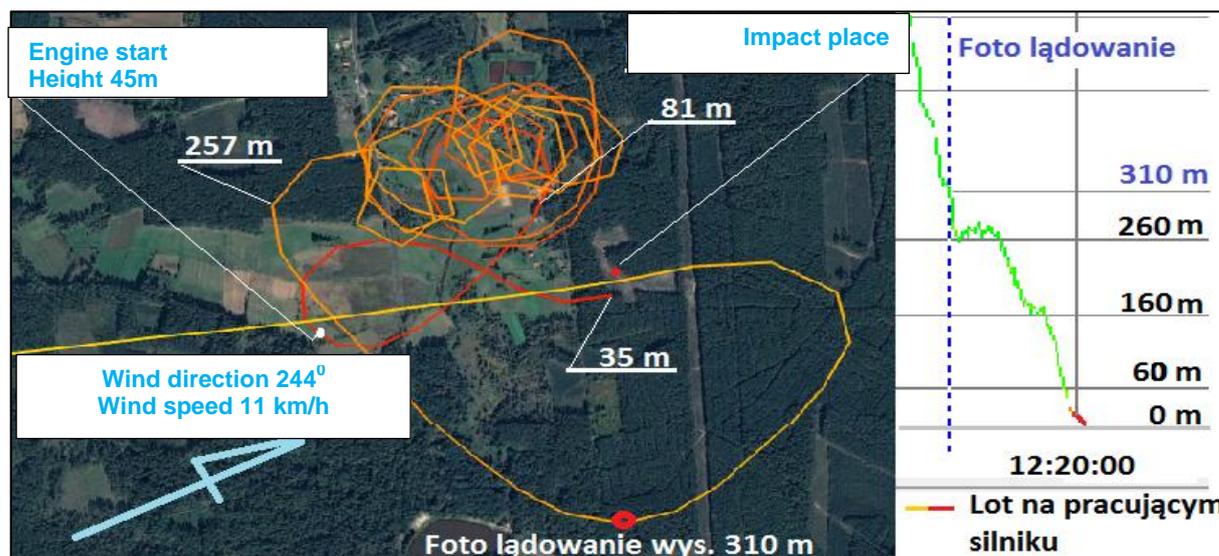


Fig. 5. The final portion of the flight. On the right, on the height graph, the yellow and red line shows the engine operation as recorded by the recorder [source: PKBWL].

The witness of the final phase of the flight said that the glider passed very low above his house, very close to the power line. The glider was heading towards the forest, and his engine was running loudly but evenly. The witness did not see the pilot perform any "nervous maneuvers". According to him, the glider flight path was the same all the time, he did not see the glider descend or climb. The witness estimated the glider's speed at about 100 km/h. After a moment, when the glider disappeared behind the trees, he heard a bang.

The witness and his son-in-law went to the scene of the accident and notified the emergency services by phone. They did not get too close to the crashed glider because they were afraid that it could explode. After a short time, emergency services and police arrived at the scene.

The GPS recording of the final portion of the flight ends at 35 m AGL at 14:20:07hrs and about 2s later the glider collided with the ground.

The final portion of the flight was reproduced based on DECU (Digital Electronic Control Unit) recording, which recorded flight parameters from the moment of engine starting to the moment of collision.



Fig. 6. The final portion of flight retrieved from DECU [source: glider manufacturer].

The engine started working at about 45 m AGL, when the pilot was making a right turn bringing the glider over a forest. Such action was illogical, incompatible with the procedure for starting a sustainer engine and with a good aviation practice.

A sustainer engine should be started at least 300 m above the previously selected area suitable for landing. As the Flight Manual (FM) reads, the jet engine installed on the accident glider starts running within 30s from the moment the start button has been pushed.

It should be remembered that not always the engine starts after the first pushing. According to the FM, after an unsuccessful start of the engine, another attempt can be made about 30s afterwards. In the case of an unsuccessful engine starting, it is necessary to make a landing maneuver for off-field landing.

It should be remembered that despite a little drag of the jet engine after its extension, the rate of descent of the glider increases. As it can be seen from the

graphs in Fig. 6, the flight speed continuously decreased, and the glider was also descending until the engine reached about 98% of its power. Then, for about 10 s, the glider was climbing slowly, while its speed was still decreasing.

In the SCAAI opinion, the pilot began climbing to avoid collisions with trees. About 40 seconds after start up the engine reached full thrust, however, the flight speed dropped to 45 km/h and a moment later the speed began to increase while the glider descended rapidly.

In the SCAAI opinion, that was the moment when the glider was in the firebreak and in order to avoid collision with trees, the pilot started a sharp left turn. During the turn the glider was stalled and hit the ground with the left wing in the first phase of the spin. The wing broke in two places, i.e. the place where the tip was attached and in the area of the brake.

During the collision the left wing was stopped while the right one was still moving and producing lift, which caused the glider to turn around its longitudinal axis by the angle of  $65^\circ$  and hit a tree with the right and then the left side of the cockpit (Fig. 7). While hitting the tree, the nose part of the glider was stopped and due to inertial forces the rear part began to rotate to the right (Fig. 7 - white arrow). During the rotation the right wing hit a tree (Fig. 8) and most likely the tail beam broke at that time.

During the rescue operation, to get the pilot out of the cockpit, the right wing of the glider was moved back and the nose part of the fuselage was raised and turned. As a result of the accident the pilot was killed on the spot and the glider was destroyed.



Fig. 7. Probable course of the final stage of the accident. [source: PKBWL].

Fig. 8. Indentation of the leading edge of the right wing and traces on the trunk where the wing hit the tree [source: PKBWL].



**14. Cause of the occurrence:**

At the altitude specified by the procedure, failure to make decision about terminating the flight and starting the sustainer engine or landing.

**15. Contributing factors:**

Not determined.

**16. Safety recommendations:**

Not issued.

**17. Proposed systemic changes and/or other comments:**

None

**16. Annexes:**

None

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**THE END**

Investigator-in-Charge

*Signature on original*

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