AIRCRAFT SERIOUS INCIDENT INVESTIGATION REPORT

June 13, 2025
Adopted by the Japan Transport Safety Board
Chairperson RINOIE Kenichi
Member TAKANO Shigeru
Member MARUI Yuichi
Member SODA Hisako
Member TSUDA Hiroka
Member MATSUI Yuko

Company	Privately owned
Type, Registration Mark	Grob G109B (Motor Glider, Two-Seater), JA2416
Incident Class	Dragging during landing of an engine cowl and any other part of the aircraft other than the landing gears Item (iii), Article 166-4 of the Regulation for Enforcement of the Civil Aeronautics Act of Japan
Date and Time of the Occurrence	At about 14:04 Japan Standard Time (JST: UTC+9 hours), May 5, 2024
Site of the Serious Incident	Fukushima City Temporary Operation Site (for agricultural use) (Fukushima Sky Park), Fukushima City, Fukushima Prefecture (37° 49' 24"N, 140° 23' 16"E)

1. PROCESS AND PROGRESS OF THE SERIOUS INCIDENT INVESTIGATION

Summary of the Serious Incident	On Sunday, May 5, 2024, when the glider landed on the airstrip (Runway 14) at Fukushima Sky Park, the glider's attitude became unstable, with its propeller blades, propeller spinner and the lower section of the engine cowl touching the ground. The glider then came to a stop.
Outline of the Serious Incident Investigation	On May 5, 2024, the Japan Transport Safety Board (JTSB) designated an investigator-in-charge and an investigator to investigate this serious incident. Comments on the draft Final Report were invited from the parties relevant to the cause of serious incident and the Relevant State.

2. FACTUAL INFORMATION

Aircraft Information

Aircraft type: Grob G109B
Serial number: 6241 Date of manufacture: January 30, 1984
Airworthiness certificate: No.2023-33-30 Validity: September 18, 2024

Personnel Information

Captain	Age 63
Private pilot certificate (Glider)	November 13, 2015
Rating and limitation: Motor Glider Without Tow Hook	November 13, 2015
Pilot competence assessment/confirmation	Expiration date of piloting capable period: November 26, 2025
Class 2 aviation medical certificate	Validity: January 17, 2025
Total flight time	367 hours 56 minutes
Flight time in the last 30 days	3 hours 45 minutes
Flight time on the type of the aircraft	367 hours 56 minutes
Flight time in the last 30 days	3 hours 45 minutes

Meteorological Information

Meteorological data observed at the Fukushima Sky Park around the time of the serious incident were as follows:

13:00 Wind direction: 160°, Wind velocity: 7 kt, Temperature: 28.3°C
Atmosphere: 1,022 hPa

14:00 Wind direction: 140°, Wind velocity: 6 kt,
Occasional wind direction: 180°, Wind velocity: 8 to 10 kt
Temperature: Not noted, Atmosphere: Changed from 1,022 to 1,021 hPa

15:00 Wind direction: 140°, Wind velocity: 10 kt, Temperature: 29.2°C
Atmosphere: 1,019 hPa

Event Occurred and Relevant Information

(1) History of the flight

On May 5, 2024, at about 12:36, the glider took off from Hanamaki Airport for a familiarization flight, with the captain in the left pilot seat and the passenger in the right pilot seat, flying towards Fukushima Sky Park.

The glider entered the east traffic pattern at 2,300 ft to land on Runway 14 at Fukushima Sky Park (Runway: Direction 14/32, Length 800m, Width 25m, Elevation 402m (1,318ft)).

The FUKUSHIMA FLIGHT SERVICE*1 at the Fukushima Sky Park Administration Office saw the preceding aircraft, which had landed immediately before the glider, being blown by the wind during its landing roll and issued a wind warning to the glider, stating: "Wind 140° at 6 kt, occasionally 180° at 8 kt. Be careful".

Taking into account the possibility of losing altitude due to wind during the final approach, the captain maintained an altitude of 2,300 ft until beginning the turn onto the final approach course and after entering the final approach course, the captain set the touchdown point further awaythan usual.

Once convincing that reaching the runway was possible, the captain set the engine power to idle, initiated the descent and unlocked the lever of airbrakes*2 (see Figure 1) to deploy the airbrakes. Considering sudden speed loss caused by fluctuating winds, the captain made an approach at 70 kt, which was 8 knots faster than usual.

*1 "FUKUSHIMA FLIGHT SERVICE" refers to Flight Service Station at Fukushima Sky Park. Its staff radio information such as the active runway, wind direction and velocity, and traffic information to aircraft taking off, landing, or flying vicinity of the Sky Park.

*2 "Airbrakes" are resistance boards installed on the upper surfaces of the main wings that alter the aircraft's lift. As airbrakes reduce the lift when deployed, glider pilots can use the airbrake lever to adjust the descent angle during the landing approach. Airbrakes are also known as "dives brake". The Grob G109B flight manual states that upon releasing the airbrake lever, it shall be returned to the locked position.

When the captain looked at a wind direction indicator (windsock)*3, the wind direction was between 140° and 180° and did not seem strong enough for the windsock to flutter sideways. As it was impossible to confirm in the direction of Runway 14 visually from the Administration Office, FUKUSHIMA FLIGHT SERVICE was unable to see how the glider had landed.

However, during the final approach, the glider was blown by the wind and lost altitude. Therefore, the captain retracted the airbrakes, moved the airbrake lever to the locked position, increased the engine power and regained altitude. As the altitude returned to the captain's desired descent path, the captain unlocked the airbrake lever, and deployed the airbrakes to continue the approach.

Figure 1: Airbrake Lever

The captain fully opened the airbrakes after passing the threshold of Runway 14. Although the captain's memory of the glider's attitude when it touched down and the touchdown point was vague, the captain remembered that, as the captain was going to flare*4, the glider was blown by the wind, resulting in a hard touchdown (the first touchdown) and significant bouncing*5.

The captain did not think that the situation required a go-around, attempting to maintain a level flight to prevent the glider from floating. However, the glider was affected by the wind and floated into the air.

The glider touched down to the left of the runway centerline (the second touchdown) and bounced again. After bouncing, the glider touched down to left of the runway centerline (the third touchdown).

Although not remembering it clearly, the captain stated that the airbrakes had remained fully open.

After that, the glider made landing roll while repeatedly bouncing slightly. The captain felt that the slight bounce during the landing roll had subsided, when the glider was suddenly blown by the wind, causing the right wing to lift and the glider to yaw largely to the left.

Realizing that the captain was losing control of the glider's attitude, the captain promptly applied the brakes hard to attempt in order to stop the glider while correcting the glider's travel direction with the right rudder.

The aft fuselage of the glider was lifted and tilted forward, the propeller blades then touched the runway, followed by the propeller spinner and the lower section of the engine cowl before coming to a stop. The engine also stopped at this time.

The captain turned off the ignition switch and the fuel shutoff valve. The location where the glider came to a stop was about 540 m southeast of the threshold of Runway 14 and about 5 m northeast of the runway centerline.

*3 A wind direction indicator (windsock) is a device used to check the wind direction when an aircraft is determining the flight course for the take-off and landing. The wind speed is indicated by the angle of the windsock relative to the mounting pole and the windsock. If the windsock flutters sideways, it can be determined that the wind is blowing at about 20 kt.

*4 "Flare" is a maneuver in which the nose of the aircraft is pulled up before touchdown on the runway in order to reduce the airspeed and the rate of descent to reduce the impact of the landing。

*5 "bouncing" is a phenomenon where an aircraft bounces back into the air after the aircraft touched down during landing.

The glider was moved to the apron by the humanpower ofmembers of motor glider club the captain belongs to, with the captain and the passenger still on board.

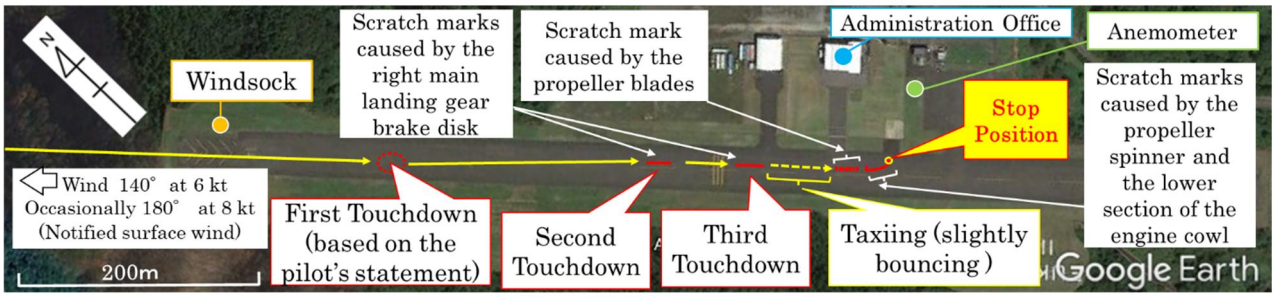

Figure 2: Estimated Flight Route and Runway Conditions

(2) Damage to the Glider

Minor damage (Figure 3)

- Scratch marks on the right main landing gear brake disk
- Scratch marks inside the right main landing gear tire
- The tip of the propeller blade (the 1st blade) was missing (about 11 cm)
- The tip of the propeller blade (the 2nd blade) was missing (about 10 cm)
- Scratch marks on the propeller spinner
- Scratch marks on the engine cowl

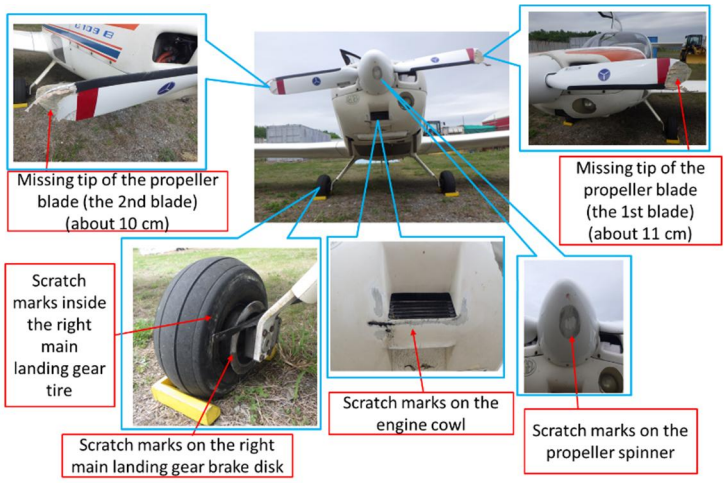

Figure 3: Damage to the Glider

(3) Runway Conditions

The following scratch marks were confirmed on the runway (Figure 2).

- Second touchdown: Scratch marks caused by the right main landing gear brake disk (about 435 cm long)
- Third touchdown: Scratch marks caused by the right main landing gear brake disk (about 520 cm long)
- After the small bounce: Seven scratch marks caused by the propeller blades (about 40 to 80 cm apart and about 300 cm long)
- Immediately before the stop: One scratch mark caused by the propeller blades, and scratch marks caused by the propeller spinner and the lower section of the engine cowl

(4) Nose Over

The glider is an airplane that has tailwheel airplane.

Differing from tricycle-gear airplane where the nose-wheels are located ahead of the main landing gear, tailwheel airplane where tailwheels are located behind the main landing gear tend to make a nose over, where the airplane's aft fuselage floats, the airplane tilts forward, and its nose touches the ground, when the brakes are applied hard at high speed, as shown in Figure 4.

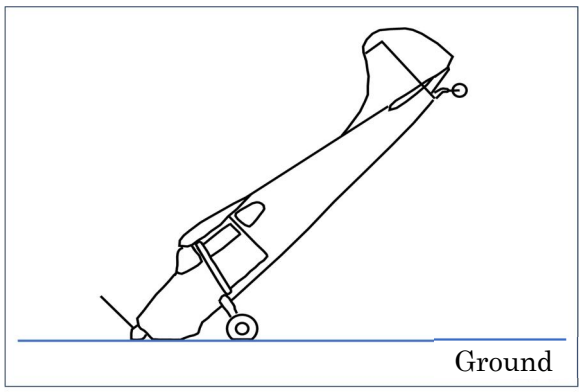

Figure 4: Nose Over

3. ANALYSIS

(1) Bouncing on Landing

The JTSB concludes that it is more likely that the glider was blown by variable winds during landing and touched down in an unstable attitude (the first touchdown), bouncing significantly as a result. The glider touched down in an unstable attitude, likely because the captain failed to correct the glider's unstable attitude caused by the variable winds. The glider then bounced significantly, possibly because the captain's flare maneuver was unable to flare not sufficient, thus, the glider's approach speed and descent rate were not reduced properly, resulting in a hard touchdown onto the runway.

It is possible that the glider floated due to a temporary increase in lift caused by the wind. It is more likely that the captain attempted to prevent the glider from floating by maintaining a level flight but was unable to fully correct the situation and the glider touched down (the second touchdown) with its right landing gear, at a high sink rate from a high altitude. The glider touched down in a high sink rate, likely because the airbrakes were fully open. It touched down with the right landing gear, possibly because the captain was unable to fully correct the glider's tilted attitude to the right, which was caused by the wind. The glider bounced again, touched down (the third touchdown) and made landing roll while repeatedly bouncing slightly.

When an airplane bounced significantly after touchdown, it is probable that the captain should have executed a go-around immediately rather than continuing the landing. Pilots should regularly review their response to bouncing during go-around training with an actual aircraft or during landing, so they can make decisions and perform the necessary procedures in the event of a bounce.

(2) Nose Over

The JTSB concludes that it is possible that the glider was not reduced its speed sufficiently, given that it bounced slightly several times during the landing roll after the third touchdown.

It is most likely that as the glider's brakes were applied too hard at insufficiently reduced speed during the landing roll, locking the tires of the main landing gear and causing the aft fuselage to lift and the glider to tilt forward and nose over, then its propeller blades then touched the runway, followed by the propeller spinner and the lower section of the engine cowl.

The glider's brakes were applied too hard, probably because the captain realized that it was impossible to control the glider's attitude, which had been affected by the wind during the landing roll, and then attempted to stop the glider promptly.

A tailwheel airplane should be brought to a full stop after the speed has been sufficiently reduced.

4. PROBABLE CAUSES

The JTSB concludes that the probable cause of this serious incident was that it is most likely that as the glider's brakes were applied too hard during the landing roll, locking the tires of the main landing gear and causing the aft fuselage to lift and the glider to tilt forward and nose over, then its propeller blades touched the runway, followed by the propeller spinner and the lower section of the engine cowl.

5. SAFETY ACTIONS

Safety Actions Required

As shown in ANALYSIS, a tailwheel airplane should be brought to a full stop after the speed has been sufficiently reduced.