

AI2024-1

**AIRCRAFT SERIOUS INCIDENT  
INVESTIGATION REPORT**

**Nagano Gliding Association  
J A 2 5 2 4**

**January 25, 2024**



The objective of the investigation conducted by the Japan Transport Safety Board in accordance with the Act for Establishment of the Japan Transport Safety Board (and with Annex 13 to the Convention on International Civil Aviation) is to prevent future accidents and incidents. It is not the purpose of the investigation to apportion blame or liability.

TAKEDA Nobuo  
Chairperson  
Japan Transport Safety Board

Note:

This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.

《Reference》

The terms used to describe the results of the analysis in "3. ANALYSIS" of this report are as follows.

- i) In case of being able to determine, the term "certain" or "certainly" is used.
- ii) In case of being unable to determine but being almost certain, the term "highly probable" or "most likely" is used.
- iii) In case of higher possibility, the term "probable" or "more likely" is used.
- iv) In a case that there is a possibility, the term "likely" or "possible" is used.

# AIRCRAFT SERIOUS INCIDENT INVESTIGATION REPORT

December 21, 2023

Adopted by the Japan Transport Safety Board

Chairperson TAKEDA Nobuo  
 Member SHIMAMURA Atsushi  
 Member MARUI Yuichi  
 Member SODA Hisako  
 Member NAKANISHI Miwa  
 Member TSUDA Hiroka



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|--|---|
| <b>Company</b>                         | Nagano Gliding Association  |
| <b>Type,<br/>Registration Mark</b>     | PZL-Bielsko Model SZD-51-1 Junior (Glider, Single-Seater)<br>JA2524   |
| <b>Incident Class</b>                  | Case where any part of the aircraft other than the landing gears of the aircraft were dragged during landing<br>Item (iii), Article 166-4 of the Ordinance for Enforcement of the Civil Aeronautics Act |
| <b>Date and Time of the Occurrence</b> | At about 14:00 Japan Standard Time (JST: UTC+9 hours), January 21, 2023   |
| <b>Site of the Serious Incident</b>    | Naganoshi glider site, Nagano City, Nagano Prefecture<br>(36°38'00"N, 138°15'21"E)  |

## 1. PROCESS AND PROGRESS OF THE SERIOUS INCIDENT INVESTIGATION

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| <b>Summary of the Serious Incident</b>               | On Saturday, January 21, 2023, when the glider landed at Naganoshi glider site in Nagano City, Nagano Prefecture, its lower surface of the fuselage forward section touched the runway, resulting in damage to the glider. On board the glider was a captain only, who was not injured.  |
| <b>Outline of the Serious Incident Investigation</b> | The occurrence of the serious incident was reported on June 9, 2023.<br>An investigator-in-charge and an investigator were designated on June 9, 2023.<br>An accredited representative of the Republic of Poland, as the State of Design and Manufacture of the glider involved in this serious incident, participated in the investigation.<br>Comments on the draft Final Report were invited from the parties relevant to the cause of the serious incident. Comments on the draft Final Report were invited from the Relevant State. |

## 2. FACTUAL INFORMATION

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|--|--|
| <b>Aircraft Information</b>              |  |
| Aircraft type :                          | PZL-Bielsko Model SZD-51-1 Junior      |
| Serial number: B2127                     | Date of manufacture: November 19, 1993 |
| Airworthiness certificate: No.2022-57-09 | Validity: July 30, 2023                |

## Personnel Information

|   |   |
|---|---|
| Captain:                                      | Age: 64   |
| Private pilot certificate (High Class Glider) | December 2, 1980  |
| Specific Pilot Competence certificate         |   |
|   | Expiry of practicable period for flight: April 10, 2024 |
| Class 2 aviation medical certificate          | Validity: September 15, 2023                            |
| Total flight time                             | 192 hours 13 minutes (501 launches)                     |
| Flight time in the last 30 days               | 0 hour 00 minute  |
| Flight time on the type of the aircraft       | 22 hours 54 minutes (31 launches)                       |

## Meteorological Information

According to the captain, when the serious incident occurred, it was fine in the vicinity of the glider site with a good visibility and without turbulence, and the wind direction was about 40° and the wind speed was 4 to 6 m/s.

## Event Occurred and Relevant Information

### (1) History of the flight

At about 11:40, the glider launched with winch towing from Runway 04L at the glider site with only the captain on board for leisure flight. After flying for about two hours, at about 14:00, the glider entered the left traffic pattern to land on Runway 04R at the gliding field. The captain extended the airbrakes\*1 slightly larger than 1/2 after flying about halfway through the base leg.

After turning for final approach, the captain set the aiming point on around the starting point of the center line marking and continued to the approach.

When the glider was passing over the grassy area short of Runway 04R, the captain felt the approach altitude was lower than usual from the way how the designation marking looked, pulled the control stick back in order to approach the original aiming point, and closed the airbrakes to less than 1/2 to try to correct the path angle (Figure 2 ①). When the glider was passing over the designation marking that was the usual target for the captain to start flare maneuver\*2, the captain felt that the height from the runway surface was higher than usual, but flared the glider for the original aiming point while pulling the control stick back (Figure 2 ②). After that, as feeling the glider shaken, the captain thought about the possibility of stall, and quickly pushed forward the control stick (Figure 2 ③). Immediately after that, the main wheel and the lower surface of the fuselage forward section landed violently on the runway

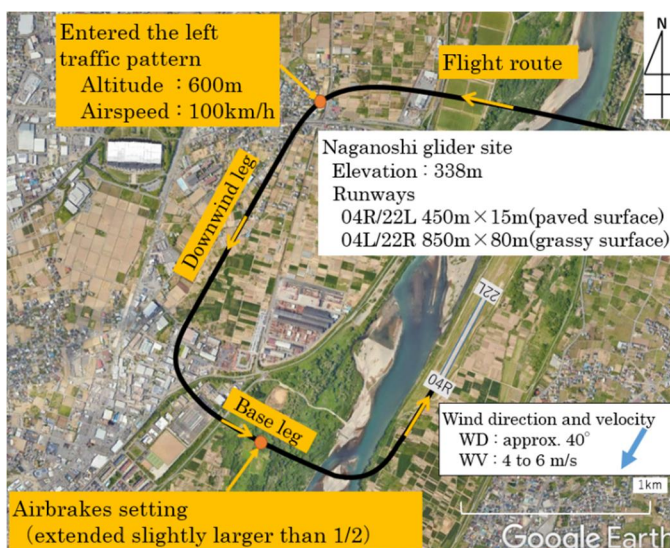


Figure 1: Flight Route  
(according to the statement)

\*1 “The airbrakes” refer to the resistance boards mounted on the upper surfaces of the main wings and are extended to modify the lift. When the airbrakes are extended, the lift is reduced, and glider pilots adjust the path angle by operating the lever during the approach for landing. They are also called “dive brakes”.

\*2 “Flare maneuver” refers to a series of nose-up control inputs in order to help minimize landing impact for a smooth landing.

almost at the same time (Figure 2 ④), the glider made a landing roll to around the middle of the runway without bouncing, and stopped.

(2) Aircraft Information

The flight manual of the glider includes the following descriptions: Stalling can be sensed by buffeting (irregular fuselage vibration caused by the separation of airflow from the wing's surface). At approx. 55 km/h, the glider drops the nose down. Stall recovery is accomplished by releasing the control stick forward. In addition, it stipulates that for landing, approach airspeed shall be 90 through 100 km/h and touchdown shall be made on 2 points, main and tail wheels.

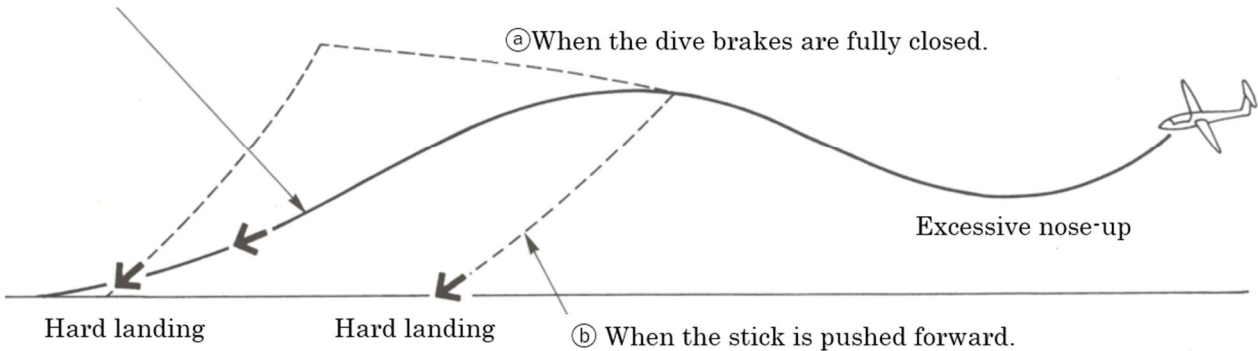
(3) Aiming Point

The association regularly informed its members that the aiming point should be set on around the center of the aiming point marking and touch down safely with enough space. On the other hand, from the captain's own flight experiences, the captain set an aiming point (near the starting point of the center line marking) on short of the point specified by the association.

(4) Recovery Operation in case of Excessive Nose-up

Regarding the recovery operation in case of excessive nose-up, "Kaze wo kike (Listen to the sound of the wind) - GLIDER PILOT'S FLIGHT MANUAL BASICS", attributed to Mitsuru Marui, (Page 89 in the 3rd edition published on June 29, 2017 by Aerovision Co., Ltd.), contains the following descriptions. (Tentative translation by JTSB)

㉟ Keep the dive brakes and stick as they are.



If the glider has floated

- ① Keep the dive brakes and stick as they are.
- ② If the sink starts again, pull the stick again according to the sink.
- ③ If the sink speed is high, fully close the dive brakes immediately before the touchdown.

(Omitted)

b. When the stick is pushed forward at the top of climb. At the top of climb, the glider manages to generate necessary lift in an extremely unstable condition with low airspeed

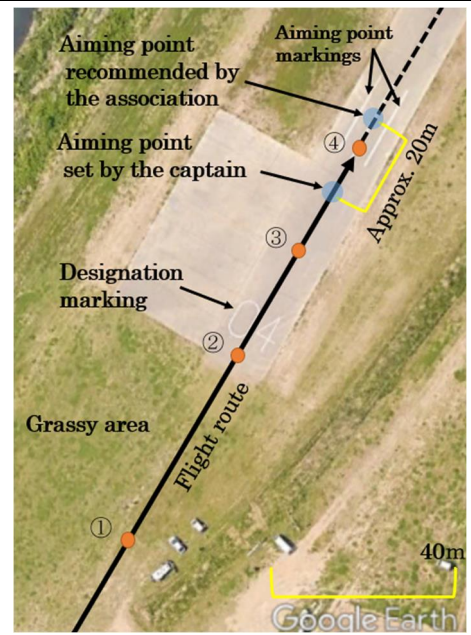


Figure 2: Situation of Touch Down (according to the statement)

and large angle of attack. Here, pushing the stick forward to reduce the angle of attack causes the glider to start sinking with its lift reduced rapidly. At this time, even having a nose-down attitude, because of insufficient altitude to recover the airspeed, the glider might be unable to be flared, resulting in a hard landing.

(Omitted)

(5) Reporting the Serious Incident by Pilot in Command (PIC/captain)

The Article 76 and 76-2 of the Civil Aeronautics Act (Act No. 231 of 1952) stipulates the PIC's obligation to report when any aircraft accident or serious incident has occurred. Regarding the PIC's reporting procedures for aircraft accidents and serious incidents, the AIP\*<sup>3</sup> describes that a PIC shall submit a report to the nearest Airport Office/Airport Branch Office or the Air Transport Safety Unit of Civil Aviation Bureau (CAB) as promptly as practicable after the event.

In this serious incident, the lower surface of the fuselage forward section of the glider contacted the ground and the outer skin was damaged that was not subject to a major repair and did not fall under aircraft accidents, but the part other than the landing gears contacted the ground surface, which falls under the category of serious incidents. However, the captain and the association did not recognize that the event falls under the case that should have reported as a serious incident, did not make the PIC report when it occurred. At a later date, when the CAB confirmed with the association about the maintenance details of the glider, it became clear that the serious incident had occurred. Accordingly, the CAB reported it to the JTSB on June 9, 2023.

### 3. ANALYSIS

(1) Landing Approach to Touchdown

The JTSB concludes that when the glider was passing over the grass area short of Runway 04R, the captain felt the approach altitude was lower than usual, pulled the control stick in order to approach the original aiming point, and closed the airbrakes to less than 1/2, which probably caused excessive nose-up and resulted in the glider floating.

After that, when the glider was passing over the designation marking, the captain felt that the height from the runway surface higher than usual, but started to flare the glider for the original aiming point before the glider started to sink again, which more likely caused the speed of the glider to slow down, resulting in the shaking of the glider. The captain, who felt the glider shaken, thought about the possibility of stall, and quickly pushed forward the control stick immediately before the touchdown in order to make nose down operations, but failed to recover the airspeed and the glider sank with the nose-down attitude, which more likely that the glider resulted in the lower surface of the fuselage forward section contacting with the runway surface.

It is desirable for glider pilots to image the countermeasures in advance in order to response to even the circumstances different from those originally envisaged, such as deviating from the planned route during the approach for landing , before making flight. In addition, even when the glider floats as its nose is excessively up before the touchdown, it is necessary to ensure thoroughly basic procedures such as making flare maneuvers and airbrakes control according to the sink without rapid nose-down control inputs to attempt to land.

(2) Reporting the Serious Incident by PIC

It is necessary for the captain and the association to deepen understanding of the case

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\*3 "AIP" stands for Aeronautical Information Publication, which is issued by the CAB of Japan and covers essential information for aircraft operations.

classified as a serious incident and its report, and summarize in advance about how to response to the event that has occurred. And should any doubt arise as to whether or not a report is necessary, they should inquire of the CAB and report at the appropriate time.

#### **4. PROBABLE CAUSES**

The JTSCB concludes that the probable cause of this serious incident was that the lower surface of the fuselage forward section more likely contacted with the runway surface because the nose of the glider went down immediately before the touchdown and glider sank with the nose-down attitude.

It is probable that the nose of the glider went down because after the glider floated as its nose was excessively up during the approach, the flare maneuvers were initiated before the glider started sinking again, and the captain, who felt the glider shaken, thought about the possibility of stall, and quickly pushed forward the control stick in order to make nose down operations.

#### **5. SAFETY ACTIONS**

##### **(1) Safety Actions Required**

As indicated in ANALYSIS, it is desirable for glider pilots to image the countermeasures in advance in order to response to even the circumstances different from those originally envisaged, such as deviating from the planned route during the approach for landing, before making flight. In addition, even when the glider floats as its nose is excessively up before the touchdown, it is necessary to ensure thoroughly basic procedures such as making flare maneuvers and airbrakes control according to the sink without rapid nose-down control inputs to attempt to land.

##### **(2) Safety Actions Taken after the Serious Incident**

- ① The association informed the association member of the contents of this serious incident. It was decided that the flight instructors of the association should confirm the basic procedures in the plenary pre-flight briefing.
- ② The association added in the emergency contact person list used in the event of aircraft accidents or serious incidents that they should inquire of the CAB, if required, because when the aircraft is damaged, it may be classified as a serious incident, and informed the association members and flight instructors.