

AA2016-5

**AIRCRAFT ACCIDENT
INVESTIGATION REPORT**

**NON-PROFIT ORGANIZATION NIRASAKI-CITY
AVIATION ASSOCIATION
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June 30, 2016

 **JTTSB** *Japan Transport Safety Board*

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 determine the causes of an accident and damage incidental to such an accident, thereby preventing future accidents and reducing damage. It is not the purpose of the investigation to apportion blame or liability.

Kazuhiro Nakahashi
Chairman,
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.

AIRCRAFT ACCIDENT INVESTIGATION REPORT

FUSELAGE DAMAGE IN LANDING
NON-PROFIT ORGANIZATION NIRASAKI-CITY
AVIATION ASSOCIATION
SCHEIBE SF34B (GLIDER, TWO-SEATER), JA2446
NIRASAKI GLIDING FIELD, TATSUOKA-MACHI, NIRASAKI CITY,
YAMANASHI PREFECTURE, JAPAN
AT AROUND 11:02 JST, APRIL 26, 2015

May 20, 2016

Adopted by the Japan Transport Safety Board

Chairman	Kazuhiro Nakahashi
Member	Toru Miyashita
Member	Toshiyuki Ishikawa
Member	Sadao Tamura
Member	Keiji Tanaka
Member	Miwa Nakanishi

1 PROCESS AND PROGRESS OF THE INVESTIGATION

1.1 Summary of the Accident	On Sunday, April 26, 2015, a Scheibe SF34B, registered JA2446, owned by Non-profit Organization Nirasaki-city Aviation Association, was damaged during a landing practice on Runway 14 at Nirasaki Gliding Field in Tatsuoka-machi, Nirasaki City, Yamanashi Prefecture, Japan.
1.2 Outline of the Accident Investigation	The Japan Transport Safety Board received the report of the accident and designated an investigator-in-charge and an investigator on April 26, 2015 to investigate this accident. An accredited representative of the Federal Republic of Germany, as the State of Design and Manufacture of the aircraft involved in this accident, participated in the investigation. Comments were invited from parties relevant to the cause of the accident and relevant State.

2 FACTUAL INFORMATION

2.1 History of the Flight	<p>According to the statements of the instructor, the trainee and the witnesses, the history of the flight up to the time of the accident is summarized as below.</p> <p>April 26, 2015 at around 10:47 Japan Standard Time (JST, UTC+9 hrs), a Scheibe SF34B, registered JA2446 (hereinafter referred to as “the Glider”), owned by Non-profit Organization Nirasaki-city Aviation Association, launched by aero-tow from Runway 14 (hereinafter referred to as "the Runway") at Nirasaki Gliding Field in Tatsuoka-machi, Nirasaki City, Yamanashi Prefecture, Japan for flight training with the trainee on the front seat and the instructor (captain) on the rear seat. In the training of that day, the Gliding Field was assumed to be an off-field landing place, and the Glider was planned to approach at 45° angle relative to the runway from the vicinity of piste*¹, turn to the left for the confirmation of the safety of the Gliding Field, wind direction, and others, after returning to the vicinity of piste, fly towards the left base of the Runway, adjust the altitude by slipping turn*² in final turn, and make landing. Although the trainee owned a private pilot certificate, the training subject was the first for him, therefore he actually made slipping turn in the sky west of the Gliding Field to confirm the procedures.</p> <p>Regarding the approach to the Gliding Field, in the briefing before the flight, the instructor had said to the trainee, "The altitude where it first passes the vicinity of piste is about 450 m (about 120 m above ground level)." This altitude was set by the instructor assuming the actual off-field landing, and was lower than the normal altitude of about 515 to 530 m (about 185 to 200 m above ground level) for starting the training subject.</p> <p>Although the trainee adjusted the altitude in the sky west of the Gliding Field and tried to fly towards the piste of the Gliding Field at the altitude of about 500 m, the instructor pointed out the start point for approach to the vicinity of piste, and the Glider turned to the left there to adjust the start point and flew towards the piste. This time, the person in charge of the piste of Nirasaki-city Aviation Association, who knew the training subject, said by radio communication, "Watch your low altitude." The instructor replied to this, saying "Roger. We make a short approach to runway 14 by left turn from over the field." When the communication was finished, the Glider passed the vicinity of piste and the trainee confirmed the altitude of 450 m by the altimeter.</p> <p>Although the trainee felt the difficulty in judging the altitude for implementation of the training subject, he did not voluntarily ask any</p>
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*¹ "Piste" refers to a facility that communicates with gliders and other aircraft flying to exchange information concerning the gliding field, and air traffic in the surrounding area, in order to ensure safe and smooth operation of the gliding field.

*² "Slipping turn" refers to a control to slip the-glider and increase the descent rate by controlling a rudder in the opposite direction to the turning during the turning.

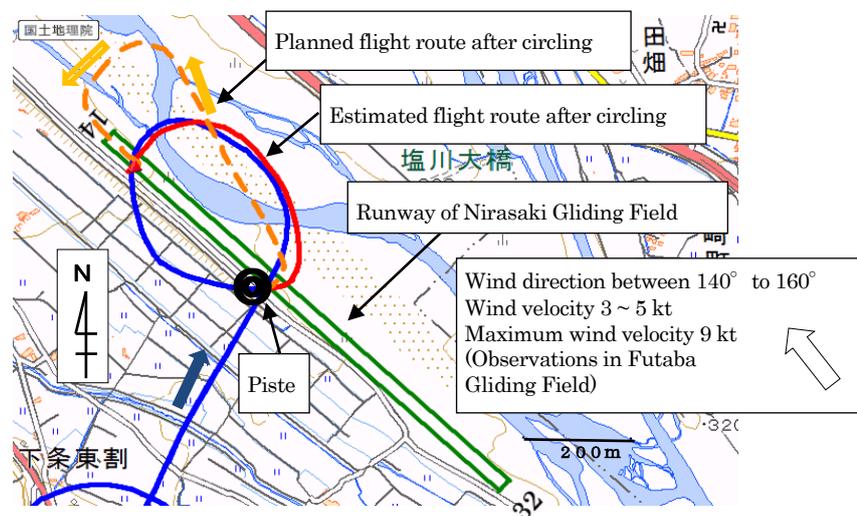
advice to the instructor. He was aware that it was no problem to continue the flight because the instructor did not point out the altitude during turning over the runway. Afterward, when he flew towards the left base of the Runway, he encountered downdraft and felt the loss of altitude.

During circling over the runway, the instructor felt the altitude was lower than usual but did not confirm it by altimeter. Afterward, he felt it was quite low at the time of flying towards the left base of the Runway but did not realize well the condition of air current at that time.

The Glider has already been very low altitude that the altitude adjustment by slipping turn was unnecessary before the start of base turn, and tried to reach the Runway by turning to the left earlier. In this turning, the instructor operated to hold down the nose because it tended to up. The trainee tried not to make the nose up but did not remember the airspeed.

Although the Glider continued to turn to the left, it could not directly face the Runway and the left main wing tip was brought in contact with the ground in front of the Runway. Afterward, the Glider touched down to the ground with the nose up, once bounced on the Runway, slightly veered the nose to the right, crossed the Runway while skidding sideways, and stopped in the edge of the Runway with the nose directed to the west.

The accident occurred at around 11:02 on April 26, 2015, in Nirasaki Gliding Field (35°41'26"N, 138°27'52"E).



(Courtesy of Geospatial Information Authority of Japan)

Estimated Flight Route Map (According to records of cellular phone with built-in GPS owned by the trainee)

<p>2.2 Injuries to Persons</p>	<p>None</p>
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	Time	Wind direction	Wind velocity (10 minutes average wind velocity /maximum wind velocity)
	10:30	140°	5 kt /9 kt
	11:00	160°	3 kt /9 kt
	11:30	150°	4 kt /9 kt

2.7 Additional Information	<p>(1) Information on Accident Site</p> <p>The Gliding Field is a grassland gliding field on the riverbed of Kamanashi-gawa river with 1,000 m in length, 30 m in width, 330 m in elevation, and the take-off and landing direction of 14/32. The usual traffic pattern is set so as to fly abeam the touchdown point in the west side of the runway at the altitude of 630 m. There is Asahi-yama mountain with the peak of 1,037 m, about 4.5 km west of the Gliding Field, and the urban area of Kai city extends in the east beyond Kamanashi-gawa river. The summary document regarding the Gliding Field issued by Japan Soaring Association says, "Be careful for strong downdraft on the short final the Runway when strong south wind blows."</p> <p>According to the person relevant to Non-profit Organization Nirasaki-city Aviation Association, the updraft tends to occur in the west of the Gliding Field and the downdraft tends to occur in the east.</p> <p>(2) Information on Fuselage Damage</p> <p>The left main wing was broken the wing tip and had several cracks in the chord direction, and the joint pin with the fuselage was bent. The rear of the fuselage was severely distorted and the part of the coating was peeled with a maximum width of about 30 cm. The tail wheel was recessed into the inside of the fuselage.</p> <p>(3) History of the Flight</p> <p>The records were left in the cellular phone with built-in GPS owned by the trainee.</p> <p>(4) Information in Flight Manual</p> <p>Best Glide Ratio: 1:34</p> <p>Recommended minimum approach speed: 97 km/h</p>
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3 ANALYSIS

3.1 Involvement of Weather	Yes
3.2 Involvement of Pilots	Yes
3.3 Involvement of Equipment	None
3.4 Analysis of Findings	<p>(1) Condition of weather</p> <p>On that day, it is somewhat likely that there was sufficient sunshine, updrafts occurred over the western land of Kamanashi-gawa river, the</p>

downdraft occurred over Kamanashi-gawa river.

(2) Situation of the touchdown

After the left main wing tip was brought in contact with the ground in front of the Runway, the tail wheel and main wheel touched down on the ground towards the center line direction. It is probable that sink rate was large in the touchdown of the fuselage. It is probable that the front wheel touched down to the ground, veering the nose slightly to the right after the fuselage bounced in its reaction, the Glider crossed the Runway while skidding sideways with the front wheel and main wheel, and it was stopped in the western edge of the Runway with the nose directed to the west.

(3) The pilots' judgment and control

Although the instructor set the altitude of first passing the vicinity of piste at an altitude lower than usual, he did not confirm the altitude by his altimeter when passing the vicinity of piste. During circling over the runway, he felt the altitude was lower than usual but did not confirm it by his altimeter. Afterward, it is highly probable that the instructor continued the flight without any his comments or advices to the trainee about the altitude until he felt that the altitude was clearly low during the flight to the start point of base turn to the Runway. Although the trainee confirmed that the altitude of first passing the vicinity of piste was about 450 m by his altimeter, he did not check the altimeter in the following flight. Although the trainee felt the difficulty in judging the altitude in the training subject due to his first implementation of the training subject, he did not ask any advices to the instructor.

It is highly probable that the instructor and the trainee were aware that the altitude was clearly low and made the left turn to the Runway direction earlier, however the altitude was too low to directly face the Runway, therefore the Glider brought the left main wing tip into contact with the ground in front of the Runway while it was banked to the left and then made the hard landing. Regarding the fact that the Glider fell below the altitude necessary to continue the training during the training flight, it is somewhat likely that the downdraft which occurred around the Gliding Field was involved.

(4) Implementation method of training

The instructor needs to sufficiently explain to the trainee the purpose of the training, flight methods, and matters to be noted before the start of training, and have him understand them. Besides, in the flight, the instructor needs to give necessary advices to the trainee, pay attention to the trainee's control, changes in weather and others, and place assurance of flight safety at the top priority without persisting in the implementation of the training subject if there was some doubt whether the training flight should continue.

If the trainee felt the difficulty in judging the altitude due to his first implementation of the training subject, he owned a private pilot certificate, therefore it is necessary for him to frankly express questions and concerns

	<p>while judging by himself, maintain useful communication with the instructor, and share his understanding with regard to not only training effects but assurance of flight safety.</p>
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	<p>The altitude judgment of glider is often carried out by visual estimation, therefore it is desirable that the visual estimation be verified by simultaneously using the altimeter for the altitude judgments at the start of training subjects or at the specific points on flight route, then the following flight should be planned.</p>
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4 PROBABLE CAUSES

<p>In this accident, it is highly probable that when the Glider performed landing training which simulated the off-field landing at the Runway, the Glider could not make a stable landing attitude because the training was continued despite the altitude that was below the altitude necessary for the training, therefore the Glider brought the left main wing tip into contact with the ground in front of the Runway, then made the hard landing, and damaged the fuselage.</p>
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<p>Regarding the fact that the training was continued below the altitude necessary for the training, it is highly probable that it was because the instructor did not perform appropriate judgment, advices, and control with assurance of flight safety as top priority while the trainee felt the difficulty in judging the altitude. Regarding the fact that the Glider fell below the altitude necessary to continue training, it is somewhat likely that the downdraft which occurred around the Gliding Field was involved.</p>
