

AA2013-1

AIRCRAFT ACCIDENT INVESTIGATION REPORT

PRIVATELY OWNED

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January 25, 2013

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.

Norihiro Goto
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

**DITCHING INTO THE RIVER
DURING POST-TAKEOFF CLIMB FOR AIRCRAFT TOWING
INVOLVING TWO PRIVATELY OWNED GLIDERS
SCHEIBE SF25C (MOTOR GLIDER, TWO SEATS), JA21KA
AND
SCHEMPP-HIRTH DISCUS B (GLIDER, ONE SEAT), JA2376
AT ABOUT 13:55 LOCAL TIME, APRIL 28, 2012
ADJACENT TO OKU GLIDING FIELD, SETOUCHI CITY
OKAYAMA PREFECTURE, JAPAN**

December 07, 2012

Adopted by the Japan Transport Safety Board

Chairman	Norihiro Goto
Member	Shinsuke Endoh
Member	Toshiyuki Ishikawa
Member	Sadao Tamura
Member	Yuki Shuto
Member	Toshiaki Shinagawa

1. PROCESS AND PROGRESS OF THE INVESTIGATION

The Japan Transport Safety Board (JTSB) designated an investigator-in-charge and two investigators on April 28, 2012 to investigate this accident. The JTSB notified the Federal Republic of Germany, as the State of Design and Manufacture of the gliders involved in this accident, of the occurrence of the accident, but the State did not designate an accredited representative. Comments from parties relevant to the cause of the accident and the relevant State were invited.

2. FACTUAL INFORMATION

2.1 History of the Flight	<p>On Saturday, April 28, 2012, a privately owned Scheibe SF25C, (registered JA21KA, a motor glider) started aircraft towing Schempp-Hirth Discus b (registered JA2376) at 13:45 at Oku Gliding Field in Setouchi City, Okayama Prefecture. A pilot was in the left seat of the towing glider. A trainee pilot was in the towed glider. At 13:55, both gliders ditched in the Yoshii River adjacent to the Gliding Field and sustained damage.</p> <p>The history of the flight up to the accident was summarized as below, according to the statements of the members of the glider flying club: the pilot, the trainee pilot, a piste member and an instructor.</p> <p>When the aircraft towing started, winds were blowing 1-3 m/s from 90-100°, slightly to the right of the launching direction of 07. There is about 50 m high hill located to the east of the Gliding Field and winds were blowing from that direction. After the takeoff roll of the towing glider, the towed glider became airborne, and the towing glider took off—normal operation. The towing glider normally accelerates to a speed exceeding 93 km/h while maintaining low altitude close to the ground after takeoff; however, it climbed by about 5 meters due to air disturbance just after takeoff when its airspeed slightly surpassed 80 km/h, bottom airspeed for the normal operation. Since its flight was stable after that, the pilot continued the towing; however, the towing glider encountered another air disturbance with sudden climb of 5 m. Its altitude above the ground level then was about 20 m.</p> <p>From the time when the towing glider made the first sudden climb, the towed glider was being towed in a nose-up attitude at low tow position. After the towing glider made the second sudden climb, its speed remained slightly above 80 km/h lower than the normal operation speed. Because the towing glider could not gain intended speed, the pilot felt that it is difficult to continue towing.</p> <p>The pilot concluded that it would be safer to tow to the river than releasing the towing line at a place where there was insufficient distance left on the Gliding Field for the towed glider to land. Keeping in mind the possibility of releasing the towing line above the river and ditching the towed glider into the river, the towed glider slowly turned to the left and tried to continue flying to the river along the normal climbing route. However the towed glider descended sliding to the left and ditched into the river from the left wing, then pulled the towing glider into the river with the towing line.</p>
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	The towing glider ditched into the river from its left wing.
2.2 Injuries to Persons	None
2.3 Damage	<p>Glider Damage</p> <p>Towing glider Destroyed (Left wing and propeller damaged)</p> <p>Towed glider Destroyed (Fuselage damaged)</p> <p>No fire broke out.</p>
2.4 Personnel Information	<p>(1) Pilot Male, Age 51</p> <p>Private pilot certificate (Glider) December 1, 2003</p> <p>Rating for High Class Glider December 1, 2003</p> <p>Rating for Motor Glider without Towing Equipment April 12, 2006</p> <p>Rating for Motor Glider with Towing Equipment May 16, 2006</p> <p>Class 2 aviation medical certificate</p> <p>Validity Until March 18, 2013</p> <p>Total flight time Glider 85 hrs. 51 min. (Number of launch : 164)</p> <p>Motor glider 122 hrs. 50 min. (Number of launch : 198)</p> <p>Total flight time on the type of aircraft 118 hrs. 40 min. (Number of towing : 22)</p> <p>(2) Trainee pilot Male, Age 66</p> <p>Student pilot permit (Glider)</p> <p>Validity Until April 20, 2013</p> <p>Total flight time 66 hrs. 36 min. (Number of launch : 162)</p> <p>Total flight time on the type of aircraft 2 hrs. 13 min. (Number of launch : 4)</p> <p>Solo flight time 25 hrs. 30 min. (Number of launch : 57)</p>
2.5 Glider Information	<p>(1) Type : Scheibe SF25C</p> <p>(Serial number : 44665</p> <p>Date of manufacture : January 12, 2001)</p> <p>Certificate of airworthiness : 2011-52-02</p> <p>(Validity : Until September 10, 2012)</p> <p>(2) Type : Schempp-Hirth Discus b</p> <p>(Serial number : 122</p> <p>Date of manufacture : October 3, 1986)</p> <p>Certificate of airworthiness : 2012-52-01</p> <p>(Validity : Until March 19, 2013)</p>
2.6 Meteorological Information	<p>Weather observed by the pilot and the trainee pilot at the time of launching</p> <p>Fine weather, good visibility, wind direction 90-100 °, wind velocity</p> <p>1 - 3 m/s</p>
2.7 Additional Information	<p>(1) Information on rescue and evacuation activities</p> <p>The towing glider sank almost at the same time when the pilot released his seat belt. He swam to the towed glider and confirmed that</p>

the trainee pilot was safe. Then he swam to the shore.

The trainee pilot went unconscious due to an impact on ditching, but regained consciousness later when water splashed on his face. Because his glider was afloat, he stayed in there and waited for the rescue. One of the glider flying club members on the shore swam to the glider with a rope, tied it to the glider. The members pulled the glider to the shore to rescue the trainee pilot.

The ambulance requested by a glider flying club member arrived and the two occupants were taken to hospital.

(2) Discontinuation of towing

The general rule at the glider flying club was: towing line release takes place upon the direction of the towing glider pilot; and when the towed glider is below 300 ft altitude and unable to return to the Gliding Field, it ditches into the river.

(3) Stall speed

The stall speeds and bottom normal operation speeds described in the flight manuals for the towing glider and the towed glider are as follows:

	Towing glider	Towed glider
Stall speed	about 65 km/h	69 km/h
Bottom normal operation speed	80 km/h	95 km/h

The stall speed for the towed glider is about 4 km/h higher than that for the towing glider, while the bottom normal operation speed for the towed glider is 15 km/h higher than that of the towing glider.

(4) Towing speed

In the “Glider Towing” section of the supplementary flight manual for the towing glider contains its minimum towing speed as 90 km/h with the caveat that the towing speed must be higher than 1.3 times V_{S1} , the minimum control speed for a towed glider. Because the stall speed for the towed glider is 69 km/h and 90 km/h is bigger than 1.3 times the stall speed, the minimum towing speed becomes 90 km/h for the towing glider.

3. ANALYSIS

3.1 Involvement of Weather	Yes
3.2 Involvement of Pilots	Yes
3.3 Involvement of Gliders	No
3.4 Analysis of Findings	(1) Involvement of Weather There is a 50 m high hill located to the east of the Gliding Field and wind was blowing from that direction at the time of the accident. Possible air disturbance existed above the Gliding Field at that time and it is somewhat likely that this may have caused two sudden climbs

of the towing glider during the post-airborne climb.

However, the wind velocity then (only 1-3 m/s) itself does not explain the cause of sudden climbs before the towing glider gained enough speed to tow the glider. Considering the speed of the wind, it is unable to rule out the possibility that the pilot, for some reason, made some nose-up control input.

(2) Involvement of the Pilot

a. Causes for the ditching into the river

It is highly probable that the towing glider stalled and ditched into the river causing the towing glider to stall by pulling with the towing line extended between the two.

As the towing glider suddenly climbed before it gained the speed necessary to tow the glider, this possibly caused the towed glider which had higher bottom operation speed than that of the towing glider to take nose-up attitude to produce drag; consequently, the towed glider failed to gain sufficient speed.

b. Judgment to abort the towing

It is probable that the pilot continued towing because the flight was stable between the two sudden climbs.

In addition, the distance left for the towed glider to land was insufficient when the towing glider made the second sudden climb. If the towing line had been released then, the towed glider would have landed in an area beyond the Gliding Field to sustain glider damage and personal injuries.

Based on the findings above, when the towing glider made the second sudden climb, the pilot and the trainee pilot were probably in a difficult situation to decide to abort the towing. However, because the towing glider's first sudden climb just after takeoff preceded the acceleration to a necessary speed to tow the towed glider, the towing glider could have continued its flight and the towed glider could have landed within the Gliding Field if a judgment to abort the towing was made at this moment.

4. PROBABLE CAUSES

In this accident, it is highly probable that the towed glider very likely stalled during the post-takeoff aircraft towing climb and ditched into the river pulling the towing glider into the river resulting in the damage of both gliders.

As the towing glider suddenly climbed before it gained the speed necessary to tow the glider, this possibly caused the towed glider which had higher bottom operation speed than that of the towing glider to take nose-up attitude producing drag; consequently, the towed glider failed to gain sufficient speed.

It is possible that the towing glider climbed before it gained sufficient speed to tow the glider due to air disturbance or the pilot's nose-up control input.

Figure 1 Estimated Flight Route and Accident Site Layout

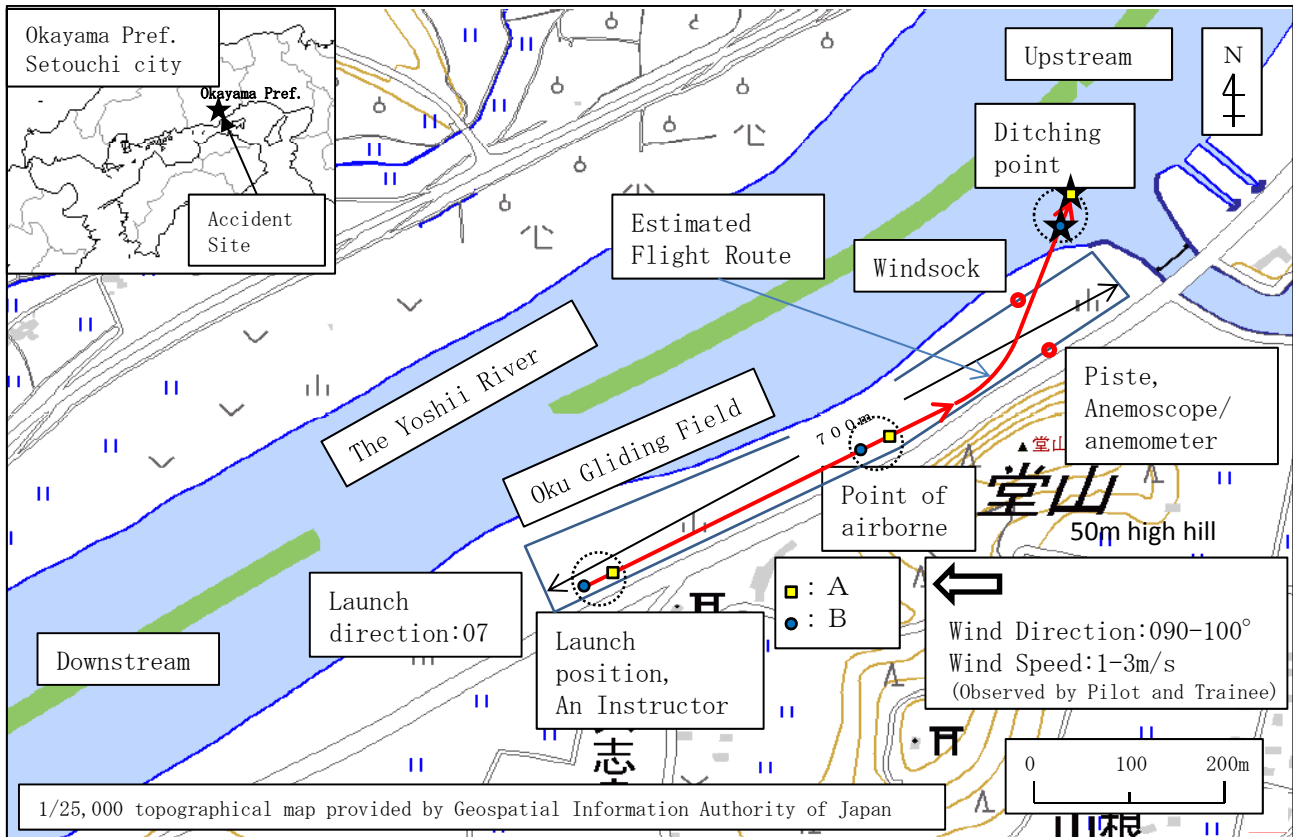


Photo1 (A)
Damaged Towing Motor Glider



Photo2 (B)
Damaged Towed Glider

