

# AIRCRAFT ACCIDENT INVESTIGATION REPORT

## CRASH

## PRIVATELY OWNED

## SCHEIBE SF28A TANDEM FALKE

## (MOTOR GLIDER, TWO-SEATER), JA2177

## TAKAYAMA CITY, GIFU PREFECTURE

## AFTER 12:00 JST, OCTOBER 26, 2022

May 30, 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

### 1. PROCESS AND PROGRESS OF THE AIRCRAFT ACCIDENT INVESTIGATION

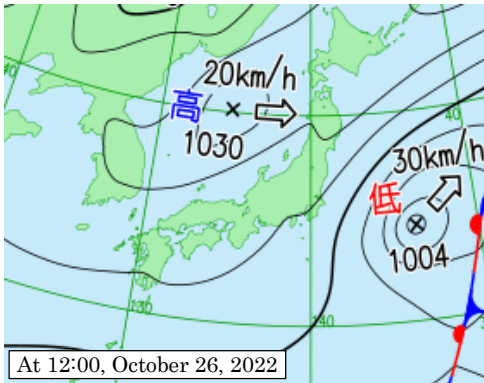
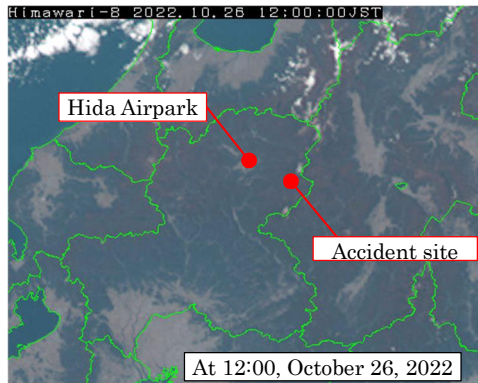
<b>1.1 Summary of the Accident</b>	<p>On Wednesday, October 26, 2022, a privately owned Scheibe SF28A Tandem Falke, JA2177, was flying from Hida Airpark in Takayama City, Gifu Prefecture to Toyama Airport for a familiarization flight, but crashed into the mountains in Toyama City.</p> <p>There were two people on board, the pilot and a passenger, and both suffered fatal injuries.</p> <p>The glider was destroyed in the crash but no fire broke out.</p>
<b>1.2 Outline of the Accident Investigation</b>	<p>On October 26, 2022, the Japan Transport Safety Board (JTSB) designated an investigator-in-charge and an investigator to investigate the accident. On December 9, 2022, another investigator was assigned for this investigation.</p> <p>Although this accident was notified to the Federal Republic of Germany, as the State of Design and Manufacture of the glider involved in this accident, the Federal Republic of Germany did not designate its accredited representative.</p> <p>Comments on the draft Final Report were not invited from the persons relevant to the cause of the accident because the two persons on board the glider were fatally injured in this accident. Comments on the draft Final Report were invited from the Relevant State.</p>

## 2. FACTUAL INFORMATION

<p><b>2.1 History of the Flight</b></p>	<p>According to the statements of those involved in the accident, the history of the flight is summarized as follows:</p> <p>On October 26, 2022, at 11:45 Japan Standard Time (JST: UTC + 9hrs, unless otherwise stated all times are indicated in JST on a 24-hour clock), a privately owned Scheibe SF28A Tandem Falke, JA2177, took off from Hida Airpark in Takayama City, Gifu Prefecture, for a familiarization flight to Toyama Airport.</p> <p>The glider was designed with a front to back tandem seating arrangement (see Figure 1), and the pilot sat in the front seat, and the passenger, who had no Pilot certificate, sat in the rear seat for the experience flight.</p> <p>According to the flight plan submitted by the pilot, the glider was to fly under visual flight rules (VFR) from “Norikura” via “Tateyama” to Toyama Airport. (Figure 2)</p> <p>As the glider did not arrive at Toyama Airport even after 13:45, the estimated time of arrival, and there was no communication between the glider and air traffic control facilities in the vicinity of the flight route, Kansai FAIB*<sup>1</sup> at the Kansai Airport Office of the Osaka Regional Civil Aviation Bureau of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) contacted the Rescue Coordination Center (RCC)*<sup>2</sup> about the glider's situation, and the search and rescue (SAR) operation was launched.</p> <p>At 15:45 on October 26, 2022, a helicopter operated by the Gifu Prefectural Police Aviation Unit on a SAR operation found that the glider had crashed in the mountains at an altitude of about 1,800 m near Ikegahora, Takane Town, Takayama City, Gifu Prefecture. (Figure 3)</p> <div data-bbox="858 772 1442 1012">  </div> <p style="text-align: center;">Figure 1: The Glider</p> <div data-bbox="413 1435 916 1809">  </div> <p style="text-align: center;">Figure 2: Route on the Flight Plan</p> <div data-bbox="928 1435 1431 1809">  </div> <p style="text-align: center;">Figure 3: The Accident Site</p>
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\*1 "FAIB" stands for Flight & Airport Information Base, which is an organization that centrally collects, manages, and provides all the necessary information for aircraft operations and provides coordination and support for aircraft operations.

\*2 The "Rescue Coordination Center (RCC)" is an organization that centrally collects necessary information, contacts and coordinates with the relevant authorities in order to carry out search and rescue operations quickly and efficiently.

	The accident occurred after 12:00 on October 26, 2022, in the mountains near Ikegahora, Takane Town, Takayama City, Gifu Prefecture (36° 04' 52" N, 137° 30' 57" E).	
<b>2.2 Injuries to Persons</b>	Two people (pilot and passenger) suffered fatal injuries.	
<b>2.3 Damage to the Aircraft</b>	Extent of damage: Destroyed <ul style="list-style-type: none"> <li>• Wings: Separated and destroyed</li> <li>• Fuselage: Broken, deformed and damaged</li> <li>• Propellers: Damaged</li> </ul>	
<b>2.4 Personnel Information</b>	Pilot: Age 80 Commercial pilot certificate (Glider) August 1, 1966 Pilot competency assessment Expiration date of piloting capable period: October 2, 2023 Type rating for Motor Glider October 13, 1970 Class 1 aviation medical certificate Validity: June 27, 2023 Total flight time (Glider) about 3,855 hours Total flight time (Motor Glider) about 930 hours	
<b>2.5 Aircraft Information</b>	(1) Glider Type: Scheibe SF28A Tandem Falke Serial number: 5776, Date of manufacture: February 10, 1975 Airworthiness Certificate: No. 2022-52-06 Validity: October 12, 2023 Category of airworthiness: Motor Glider, Utility U Total flight time 4,658 hours 46 minutes Flight time since last periodical check (100h Check on October 13, 2022) 7 hours 35 minutes (2) Engine Type: Limbach L1700 EA1 Serial number: 1627-1, Date of manufacture: Unknown Total service time since overhaul: 842 hours 16 minutes (3) Weight and Balance When the accident occurred, the weight and the position of the center of gravity of the glider were estimated to have been within the allowable range.	
<b>2.6 Meteorological Information</b>	(1) On the day of the accident, the whole of Gifu Prefecture was cloudless and covered by the migratory high-pressure system. <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Figure 4: Surface Analysis Chart</p> </div> <div style="text-align: center;">  <p>Figure 5: Meteorological Satellite Imagery (Visible)</p> </div> </div>	

	<p>(2) According to an official at the Hida Airpark Office, on the day of the accident, there were no clouds around Hida Airpark and the weather was calm with almost no wind.</p> <p>(3) According to a helicopter pilot who was flying over Takayama City around the time when the glider took off, at an altitude of 6,000 ft (about 1,800 m) around Takayama City, there was a north wind with a velocity of 5 kt, with no fluctuation and disturbance in wind direction and velocity, in addition, it was such weather conditions that there were no clouds as far as the commanding view, and the visibility was so good that one could see far away.</p> <p>(4) According to the pilot of the Gifu Prefectural Police Aviation Unit, which conducted the SAR operation for the glider, on the day of the accident, the wind around Mt. Norikura was northeasterly at 10 kt or less, the air flow was stable, and there was almost no wind on the leeward side of the ridge and in the valley.</p>
<p><b>2.7 Additional Information</b></p>	<p>(1) Flight Crew Information</p> <p>The pilot, who had been based mainly at Hida Airpark since April 2014, had experience in flights over the surrounding mountainous areas and cross-country flights to Toyama Airport and others. In addition, the pilot had a flight instructor rating and was involved in flight training as a flight instructor in the club to which the pilot belonged.</p> <p>(2) Glider Maintenance Information</p> <p>About two weeks prior to the accident, the glider had undergone a periodical check, during which the maintenance work such as the replacement of fuel hoses, had been carried out. The flight time since the last periodical check was 7 hours 35 minutes, during which no malfunctions had occurred.</p> <p>(3) Communication Information</p> <p>The Hida Airpark Flight Advisory Service Station (Hida Flight Service) did not communicate with the glider after take-off.</p> <p>The JTSA inquired to the Civil Aviation Bureau of the MLIT for records of communication between the air traffic control facilities and the glider, which revealed that there were no records of communication with the glider, the glider had not communicated with nearby air traffic control facilities after take-off from Hida Airpark.</p> <p>In addition, the air traffic control radar records did not show that there were any track records of aircraft flying in the vicinity of the accident site at the time of the glider's flight.</p> <p>(4) The Accident Site</p> <p>The glider was found crashed into a slope of about 50° with trees and undergrowth, in the valley on the mountainside on the southwest of Mt.</p> <div data-bbox="842 927 1433 1258" data-label="Image"> </div> <p style="text-align: center;">Figure 6: Geographical Features of the Vicinity of the Accident Site</p>



Norikura, with facing to the valley side. (Figure 6, Figure 7)

The right and left wings were broken off and the nose section of the fuselage, where the engine was mounted, was broken, bent and deformed.

In addition, there was deformation and damage to all parts of the glider, the canopy was cracked and scattered all over the place, but there was no evidence of fire in the engine, fuel system and others, and fuel remained in the tank.



Figure 7: Accident Site and Glider Damage

#### (5) Condition of the Retrieved Glider

The recovery of the glider took place in July 2024, about a year and eight months after the accident, and the glider was dismantled at the accident site and then transported by helicopter.

The recovered glider was cut into small sections for transport, but there was no stiffening or damage to the control system connections and hinges, and no defects were found in the fuel system hoses and piping. In addition, there was no evidence in any of the cockpit switches that engine shutdown procedures were performed during the flight.

The engine, including accessories and other items, was disassembled and examined in detail, and from use, no defects were identified that would cause engine failure, such as sudden loss of power during flight, engine shutdown or others, except for carbon build-up from use.



Figure 8: The Glider after Recovery

#### (6) GPS Position Information of the Glider

Figure 9 shows the straight lines (dashed lines) connecting each position based on the position information recorded by the pilot's mobile phone with GPS

function. (The straight lines do not show the glider's flight path, but the positional relationship of each position recorded by the mobile phone).

The position information after 12:07:51 was almost unchanged from the same position, and was consistent with the accident site where the glider was found.

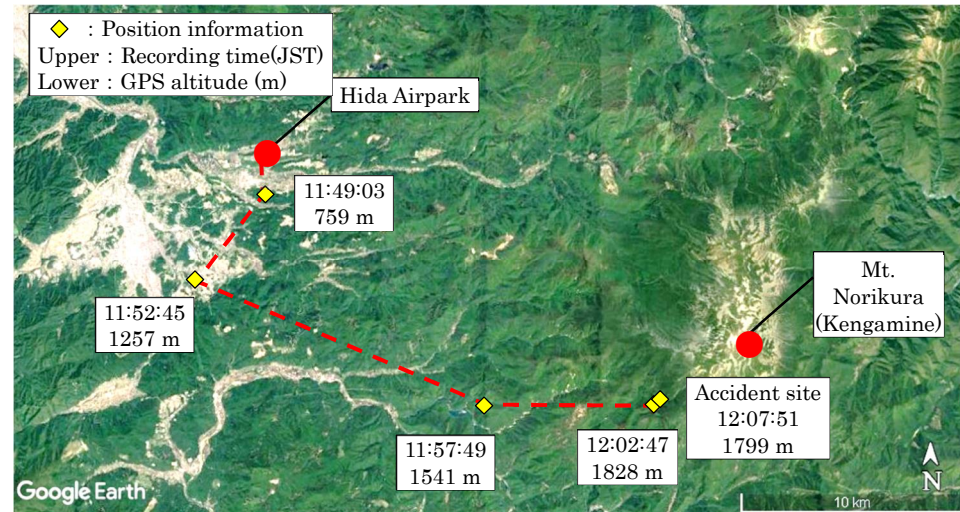


Figure 9: Changes in Position Information  
(The straight lines do not indicate the flight track.)

#### (7) Medical Information

According to the information from Gifu Prefectural Police, the immediate cause for the pilot's death was blood loss due to multiple injuries all over the body, while the immediate cause for the passenger's death was brain stem damage due to bruising in the forehead area.

The autopsy revealed that the pilot had multiple old myocardial infarctions<sup>\*3</sup> and coronary artery sclerosis and stenosis, as well as findings that suggested acute myocardial ischaemia in a portion of the pilot's heart muscle. Therefore, it is possible that the pilot suffered loss of consciousness seizures due to the acute myocardial ischaemia developing during the flight.

#### (8) Myocardial Ischaemia

Myocardial ischaemia is reduced blood flow to the heart muscles caused by blockage of a coronary artery supplying blood to the heart due to arteriosclerosis or other causes, and if this condition persists, myocardial infarction may occur due to myocardial necrosis.

Symptoms of myocardial ischaemia include severe chest pain, breathlessness and others, but some elderly people and diabetics may not have any significant subjective symptoms.

#### (9) Information on the Pilot's Aviation Medical Examination

As the pilot's aviation medical examination undertaken in May 2019 showed the result that there was an "abnormality" found in the resting electrocardiogram test, the designated aviation medical examiner deemed that the pilot might not conform to the aviation medical examination standards,

<sup>\*3</sup> "Multiple old myocardial infarction" refers to a condition in which there is evidence of a previous myocardial infarction resulting in myocardial necrosis and fibrotic myocardium in multiple areas of the heart muscle.

	<p>therefore the pilot underwent an additional examination at a special hospital. Also, in the electrocardiographic exercise testing undertaken as additional examination, the pilot was tested positive. Therefore, a coronary CT scan was added, in which the pilot was diagnosed to have no significant coarctation in three branches of the coronary arteries and the pilot was deemed to have met the specified medical standards during the aviation medical examination, an aviation medical certificate was issued.</p> <p>The resting electrocardiogram in 2020 and 2021 showed a “suspected abnormality”. However, taking this result into consideration, the designated aviation medical examiner confirmed with a coronary CT scan in 2019 that there was no abnormality in the pilot’s coronary arteries, there was little change in the waveform trend compared to the resting electrocardiogram taken in May 2019, and the pilot himself had no subjective symptoms. As a result of comprehensive consideration of the matters above, the designated aviation medical examiner determined that the pilot was deemed to conform the aviation medical examination standards. In the aviation medical examination in 2022, the resting electrocardiogram showed the result of “normal”, therefore the designated aviation medical examiner determined that the pilot was deemed to conform the aviation medical examination standards.</p> <p>In addition, according to the records of the aviation medical examination, the pilot had declared to be a regular user of medication for diabetes and high blood pressure.</p> <p>(10) Aviation Medical Certificate System</p> <p>A Fight Crew Member shall hold an Aviation Medical Certificate and an Airmen Competence Certificate in order to perform aviation duties. Applicants for an Aviation Medical Certificate shall be assessed in accordance with the criteria for medical examination prescribed in Appended Table 4 of the Regulation for Enforcement of Civil Aeronautics Act of Japan (Order of the Ministry of Transport No.56 of 1952). As the pilot held a commercial pilot certificate, the pilot was assessed for a Class 1 aviation medical certificate. The validity period of the aviation medical certificate is categorized according to the pilot's age and the type of aircraft the pilot would fly on board, and is one year for the pilot over 60 years of age to perform navigational duties on board the glider.</p> <p>The significance of the aviation medical examination is described in the “Manual for Aviation Medical Examinations” (issued in 2007; Kokukujo No. 531), which reads as follows:</p> <p><i>1 - 3 (Excerpts) Medical examination is intended to provide a cross-sectional check of the mental and physical condition at the time of the examination, and the aviation medical certificate does not guarantee that flight operations will not be disrupted during the validity period.</i></p>
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### 3.ANALYSIS

(1) Weather Conditions
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The JTSB concludes that on the day of the accident, there were most likely no meteorological problems that would have hindered the flight, and that in the mountainous areas, the flight was not affected by airflow disturbances and downdrafts.

## (2) Information on the Glider

The JTSB concludes as follows:

About two weeks before the accident, the glider had undergone a periodical check, and there had been no malfunctions in the period between the periodical check and the accident. The glider crashed with fuel remaining in the tank, and during the examination of the glider after recovery there was no evidence of the occurrence of any malfunction in the glider, control system and others, which would have prevented continuation of the flight during the flight, and no malfunction was observed which would have caused the engine to fail. In addition, the glider is a motor glider capable of gliding flight with the engine deliberately shut down, and is the type of glider where engine failure is unlikely to be a direct cause of the crash. From the above, it is highly probable that the damage to the glider was caused by the impact of the crash, and it is more likely that there was no failure in the glider or engine which led to the glider crashing.

## (3) Health Conditions of the Pilot

The JTSB concludes that the autopsy revealed that the pilot had the symptom of coronary artery sclerosis and stenosis, and that traces of multiple old myocardial infarctions were identified in the pilot's heart, more likely suggesting that the pilot was in the health condition predisposing to ischemic heart disease. The pilot had evidence of a previous myocardial infarction, in the aviation medical examination every year, however, the pilot declared that the pilot had no subjective symptoms, this is because the pilot was elderly and diabetic, which possibly resulted in the pilot having fewer subjective symptoms. There were findings that suggested acute myocardial ischaemia in part of the pilot's heart muscle, which possibly caused the pilot to experience loss-of-consciousness seizures due to the development of acute myocardial ischaemia during the flight.

## (4) Crash of the Glider

The JTSB concludes that at 12:02:47, the glider had not yet reached the crash site (the accident site), and at 12:07:51, the glider's position information was consistent with the crash site, therefore the glider most likely crashed between these times.

It is possible that the pilot developed myocardial ischaemia to the extent that the pilot suffered loss-of-consciousness seizures during the flight, which could have led to incapacitation<sup>\*4</sup>. In addition, as the passenger had no Pilot certificate, the passenger was unable to maneuver the glider in place of the pilot and the glider lost control, possibly resulting in a crash.

# 4. PROBABLE CAUSES

The JTSB concludes that the probable cause of this accident was that as the pilot fell into incapacitation due to the development of myocardial ischaemia, the glider lost control, possibly resulting in a crash.

# 5. SAFETY ACTIONS

## Safety Actions Considered Necessary

Pilots should be aware of their state of health and continue to maintain it on a daily basis. In addition, as the aviation medical certificate does not guarantee that the pilot is in good health during

<sup>\*4</sup> "Incapacitation" refers to a physical condition in which a flight crew member was unable to perform any flight duties.



the validity period, it is important for pilots to stop flying and see a doctor as soon as possible if they feel that something is wrong with their body.