

AA2016-8

**AIRCRAFT ACCIDENT  
INVESTIGATION REPORT**

**PRIVATELY OWNED  
J A 2 1 D A**

**September 29, 2016**



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

PRIVATELY OWNED DIAMOND AIRCRAFT  
HK36TTC (MOTOR GLIDER, TWO-SEATER), JA21DA  
DAMAGE TO THE AIRFRAME IN LANDING  
BIEI GLIDING FIELD IN BIEI-CHO, KAMIKAWA GUN,  
HOKKAIDO, JAPAN  
AT ABOUT 11:40 JST, AUGUST 25, 2015

September 9, 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 Tuesday, August 25, 2015, a privately owned Diamond Aircraft HK36TTC, registered JA21DA, took off from Biei Gliding Field for a familiarization flight, and when landing on the Field, ran out of the runway and was damaged.
1.2 Outline of the Accident Investigation	On August 25, 2015, the Japan Transport Safety Board designated an investigator-in-charge and an investigator to investigate this accident. Although this accident was notified to the Republic of Austria, as the State of Design and Manufacture of the aircraft involved in this accident, Austria did not designate its accredited representative. Comments were invited from the parties relevant to the cause of the accident and the relevant State.

## 2. FACTUAL INFORMATION

2.1 History of the Flight	<p>According to the statements of the captain and the witness, on-site investigation, and aircraft investigation, the history of the flight is summarized as follows.</p> <p>On August 25, 2015 around 10:10 Japan Standard Time (JST, UTC+9 hrs), a Diamond Aircraft HK36TTC, registered JA21DA, took off from Runway 13 of Biei Gliding Field for a familiarization flight with a captain on the left seat. The weather on the day was clear and thus the captain had planned soaring*<sup>1</sup>, in which he scheduled to depart from Biei Gliding Field and return by way of Takikawa-Rumoi-</p>
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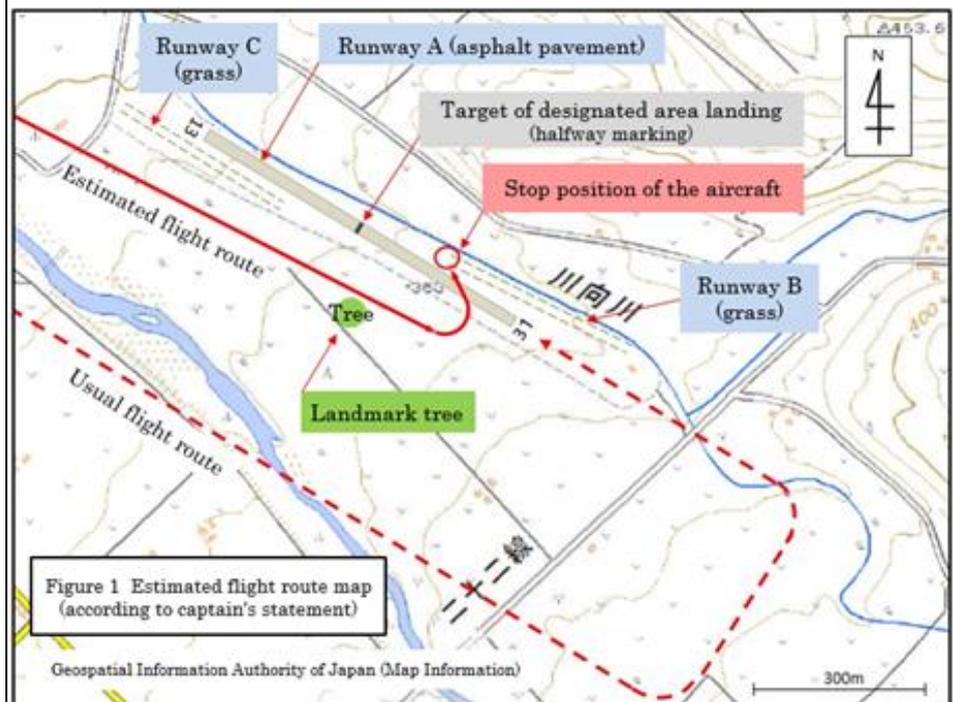
Asahidake. The captain landed at the Takikawa Sky Park (Takikawa City) at 10:35 and, after a break, took off at 11:10, but decided to return to Biei because there was not thermal suitable for soaring.

When it was landing at the Biei Gliding Field, the captain decided that he would stop an engine as an exercise and performed a landing at a designated area with a glider mode.

The captain stopped the engine in approximately 7 nm west-northwest of the Gliding Field at an altitude of about 4,100 ft and flew aiming to touch down at the halfway marking of runway 31.

Although the captain usually flies at an altitude of 2,000 ft (ground height 800 ft) in the vicinity of the gliding field, the aircraft was at an altitude of about 1,900 ft at about 1 nm from to the gliding field. Although the captain wavered a little whether to change to Runway 13 for landing, he judged that it was possible to make landing on Runway 31 if turning with a deeper bank angle (35°) than usual (25°), considering wind is calm, and continued to approach Runway 31 while looking at a tree in the south of the Gliding Field as a landmark.

The aircraft was at a lower altitude, thus it flew at a speed of about 55 kt on a route closer to the runway than usual flight route, passed at a ground height of about 130 ft between the landmark tree and the runway, and turned left at a bank angle of 35°. The captain judged during the turning that it was impossible to align to Runway 31 and continued to turn so as to make landing on grass north side of Runway 31. The captain felt that the aircraft was descending faster than usual. The aircraft brought the left wing tip into contact with the ground with itself tilted during landing, had some parts of the fuselage damaged, and came to a halt in the condition of leaning forward. The



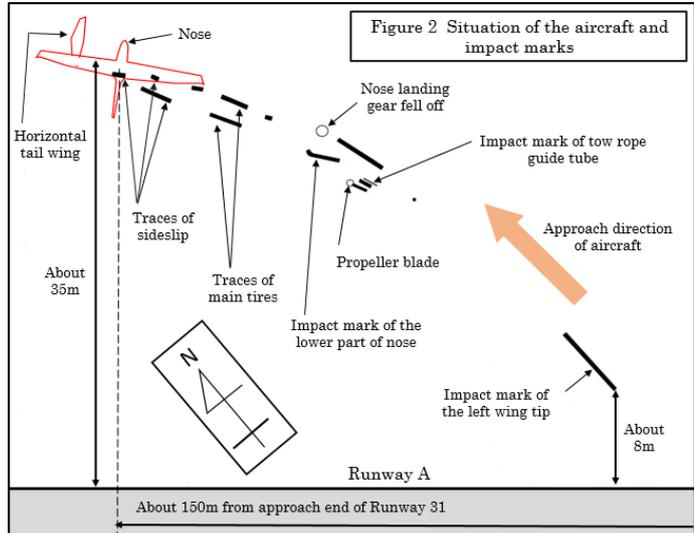
	<p>captain had not restarted the engine and extended dive brake.</p> <p>The accident site was at grass north side of Runway 31 in the Biei Gliding Field (43° 31'51" N, 142° 33'57" E) and the time and date of occurrence was around 11:40 on August 25, 2015.</p>																		
2.2 Injuries to Persons	None																		
2.3 Damage to the Aircraft	<p>Extent of damage: Substantially damaged</p> <ul style="list-style-type: none"> <li>• The rear of the fuselage was ruptured (It was not separated due to the control cable, etc.)</li> <li>• Nose landing gear and horizontal stabilizer fell off.</li> <li>• Propeller blades were broken.</li> <li>• The lower part of the nose was broken.</li> </ul>																		
	 <p>Photo 1 The aircraft at the accident site</p>																		
2.4 Personnel Information	<p>Captain, Male, Age 74</p> <table border="0"> <tr> <td>Private pilot certificate (Glider)</td> <td>October 24, 1961</td> </tr> <tr> <td>Type rating for motor glider</td> <td>October 27, 1999</td> </tr> <tr> <td>Flight instructor certificate (Glider)</td> <td>November 11, 1968</td> </tr> <tr> <td>Class 2 aviation medical certificate</td> <td>Validity: October 31, 2015</td> </tr> </table> <p>Pilot Competence Assessment / Confirmation</p> <table border="0"> <tr> <td>Expiration date of piloting capable period:</td> <td>November 24, 2015</td> </tr> <tr> <td>Total flight time (excluding airplane)</td> <td>2,932 hours 56 minutes</td> </tr> <tr> <td>Flight time in the last 30 days</td> <td>1 hour 13 minutes</td> </tr> <tr> <td>Total flight time on the type of aircraft</td> <td>40 hours 17 minutes</td> </tr> <tr> <td>Flight time in the last 30 days</td> <td>1 hour 13 minutes</td> </tr> </table>	Private pilot certificate (Glider)	October 24, 1961	Type rating for motor glider	October 27, 1999	Flight instructor certificate (Glider)	November 11, 1968	Class 2 aviation medical certificate	Validity: October 31, 2015	Expiration date of piloting capable period:	November 24, 2015	Total flight time (excluding airplane)	2,932 hours 56 minutes	Flight time in the last 30 days	1 hour 13 minutes	Total flight time on the type of aircraft	40 hours 17 minutes	Flight time in the last 30 days	1 hour 13 minutes
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2.5 Aircraft Information	<p>(1) Type: Diamond Aircraft HK36TTC</p> <table border="0"> <tr> <td>Serial number:</td> <td>36.842</td> </tr> <tr> <td>Date of manufacture:</td> <td>March 20, 2009</td> </tr> <tr> <td>Certificate of airworthiness:</td> <td>No. 2014-38-07</td> </tr> <tr> <td>Validity:</td> <td>September 22, 2015</td> </tr> <tr> <td>Category of airworthiness</td> <td>Motor Glider Utility U</td> </tr> <tr> <td>Total flight time</td> <td>196 hours 17 minutes</td> </tr> <tr> <td>Maximum lift drag ratio</td> <td>27 (57 kt)</td> </tr> </table> <p>(2) When the accident occurred, the Glider's weight and the position of the center of gravity were estimated to have been within the allowable range.</p>	Serial number:	36.842	Date of manufacture:	March 20, 2009	Certificate of airworthiness:	No. 2014-38-07	Validity:	September 22, 2015	Category of airworthiness	Motor Glider Utility U	Total flight time	196 hours 17 minutes	Maximum lift drag ratio	27 (57 kt)				
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2.6 Meteorological Information	<p>According to the captain, the weather in the vicinity of the Gliding Field at the time of the accident is clear, the wind was weak, and visibility was good. The wind direction, wind velocity, and temperature are as follows, which were observed in Biei Regional Meteorological Observatory located about 9.6 km northwest of the Gliding Field:</p> <table border="0"> <tr> <td>11:30</td> <td>West-southwest</td> <td>1.4 m/s (max 4.1 m/s)</td> <td>20.6 °C</td> </tr> <tr> <td>11:40</td> <td>West</td> <td>1.5 m/s (max 3.2 m/s)</td> <td>21.0 °C</td> </tr> <tr> <td>11:50</td> <td>Northwest</td> <td>1.5 m/s (max 3.2 m/s)</td> <td>20.4 °C</td> </tr> </table>	11:30	West-southwest	1.4 m/s (max 4.1 m/s)	20.6 °C	11:40	West	1.5 m/s (max 3.2 m/s)	21.0 °C	11:50	Northwest	1.5 m/s (max 3.2 m/s)	20.4 °C						
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2.7 Additional Information

(1) Information on accident site

There was an impact mark of the left wing tip at a point about eight meter away from the runway and many impact marks along the extension from the point. In one of the impact marks, one of the broken wooden propeller blade stuck to the ground and, beyond that point, there was the nose landing gear which fell off from the installation part.

The aircraft stopped on the grass about 35 m away from the runway with the nose directed in the north-northeast. In the



surroundings of the aircraft, there were the horizontal stabilizer which fell off and signs of skidding left by main wheels. Soil adhered to the nose and the lower surface of the rear of the fuselage.

(2) Information of the Biei Gliding Field

The gliding field is at an elevation of about 1,200 ft and has Runway A (600 m × 20 m) paved with asphalt, Grasslands Runway B and C (400 m × 20 m, 350 m × 20 m). (Refer to Figure 1)

(3) Usual flight route to Runway 31 (The Red dashed line in Figure 1)

According to the captain, an aircraft usually passes through the outside of the landmark tree at an altitude of about 500 ft, and approaches with engine in idle and at a speed of about 55 kt. It uses air brake on the base-leg.

\*1 "Soaring" means a flight of obtaining height by riding thermal.

3. ANALYSIS

3.1 Involvement of Weather	None
3.2 Involvement of Pilots	Yes
3.3 Involvement of Aircraft	None
3.4 Analysis of Findings	<p>(1) Situation up to the accident</p> <p>The captain flew on a route quite closer to the runway than the usual with approaching at a low altitude, flew between the landmark tree and Runway 31 at ground altitude of about 130 ft, and turned to the left with a deeper bank angle of 35° than usual for landing. However, the captain judged during the left turning that it was</p>

impossible to align to Runway 31 and continued to turn so as to make landing on grass north side of Runway 31.

It is somewhat likely that when the aircraft turned with a deeper bank angle than usual, the captain lost the balance of control in flight controls (ailerons, elevator, and rudder), and as the bank angle became deeper, the aircraft descent more steeply than usual. Subsequently, it is probable that the left wing tip was brought into contact with the ground before the captain restored the aircraft to the horizontal position. Thereafter, it is probable that the aircraft headed for the ground with the fuselage tilted to the left, which damaged the nose landing gear installation part, made propeller blades stick into the ground, and brought the lower part of the nose into contact with the ground.

It is somewhat likely that the aircraft bounced with the reaction from the contact and brought the empennage into contact with the ground, which broke the rear of the fuselage, made the nose landing gear fall off from the installation part, and the aircraft sideslipped to a stop.

(2) Landing on Runway 31

The aircraft was at a lower altitude than usual at about 1 nm from the gliding field and flew in glider mode without thermal. It is highly probable that it was impossible to fly on the flight route for landing on Runway 31 under such conditions that the aircraft could not obtain height.

(3) Captain's judgment

If the captain had changed to the landing Runway 13 or restarted the engine to climb, and fly on the usual flight route when it was at the lower altitude than usual in about 1 nm from the gliding field, it is highly probable that the aircraft could have aligned to the runway and made landing safely.

It is probable that the captain persisted in the designated-area landing on Runway 31, to which he once decided to do training, thus was unable to make a proper decision for safety landing.

#### 4. PROBABLE CAUSES

In this accident, it is highly probable that because the aircraft was unable to face the runway in the case of a landing, it contacted the grass of the north side of the runway from the left wing tip and damaged the aircraft.

It is probable that the aircraft could not face the runway because the captain was unable to judge that appropriately to land safely by having persisted in a designated area landing on Runway 31.