

AA2014-1

**AIRCRAFT ACCIDENT
INVESTIGATION REPORT**

PRIVATELY OWNED

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January 31, 2014



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

ROLL OVER UPON TRANSITION
PRIVATELY OWNED
EUROCOPTER EC120B (ROTORCRAFT), JA120H
KAWASHIMA TEMPORARY HELIPAD
KUJUKURI TOWN, SANBU GUN
CHIBA PREFECTURE, JAPAN
AROUND 16:00 JST, SEPTEMBER 15, 2012

December 6, 2013

Adopted by the Japan Transport Safety Board

Chairman Norihiro Goto
Member Shinsuke Endoh
Member Toshiyuki Ishikawa
Member Sadao Tamura
Member Yuki Shuto
Member Keiji Tanaka

1. PROCESS AND PROGRESS OF THE INVESTIGATION

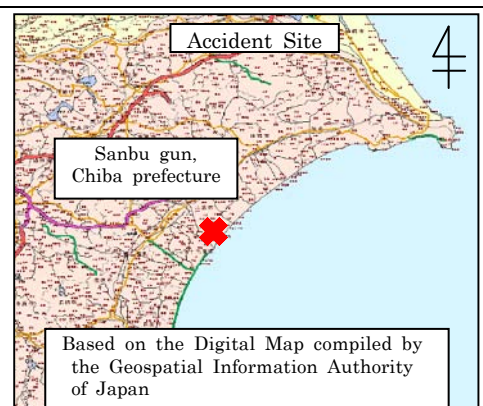
The Japan Transport Safety Board designated an investigator-in-charge and an investigator on September 15, 2012 to investigate the accident. France, responding to the JTSB's notification of the accident, designated an accredited representative as the State of Design and Manufacture of the helicopter. Comments were invited from parties relevant to the cause of the accident and relevant State.

2. FACTUAL INFORMATION

2.1 History of the Flight

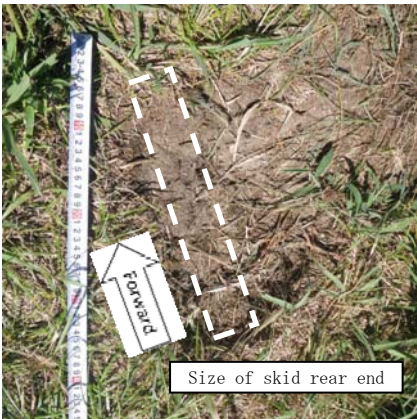
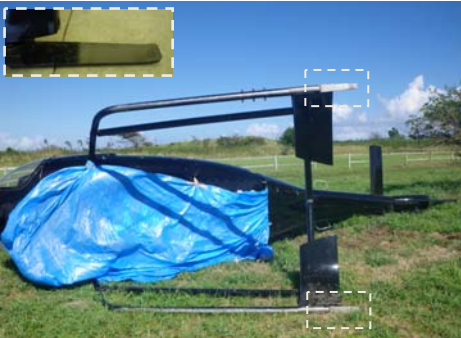
According to the statements of the pilot and the passengers, the event developed as follows:

On September 15, 2012, a privately owned Eurocopter EC120B, registered JA120H, took off from the Tokyo Heliport at 12:25 (Japan Standard Time: UTC+9 hrs) for a leisure flight to the Kawashima temporary helipad adjacent to a horseback riding club, in Kujukuri Town, Sanbu Gun, Chiba



	<p>Prefecture. Onboard the helicopter were the pilot and four passengers.</p> <p>When it settled on the helipad, the pilot sensed that the helicopter was not upright. He hovered, backed up about one meter to the right, and resettled on the ground. He cut the engine and the four passengers disembarked.</p> <p>The pilot escorted the passengers into the helicopter around 15:30 to return to the Tokyo Heliport, and then he confirmed that all four were securely fastened to their seats, closed the doors and locked them.</p> <p>Follow-on exterior check found no anomalies. He occupied the right pilot seat and started the engine. When the helicopter was light on the skids before liftoff, he applied small pedal inputs and felt that the skids were caught. Therefore he applied a small left/right rudder inputs to wiggle the helicopter to confirm the skid restraints. As he unintentionally raised the collective pitch as usual, the helicopter rolled over to the right rearward. After the helicopter settled, he cut the engine and helped the four passengers evacuate with the help of the staff members of the horse-back riding club, who rushed to the site. The exterior inspection by the pilot found no fire or fuel spillage.</p> <p>The helicopter rolled over to the right around 16:00. No anomalies were found until then.</p>
2.2 Injuries to Persons	Two passengers : minor injury
2.3 Damage	<p>Extent of damage: Substantially damaged</p> <ul style="list-style-type: none"> - All three main rotor blades were separated at the root fitting. - Damage to the swash plates. - Damage to the angle of the rear skid mount. - Damage to the aft cabin window. - Buckling of the left fuselage skin.
2.4 Personnel Information	<p>Captain Male, Age 38</p> <p>Commercial pilot certificate (rotorcraft) December 9, 1998</p> <p>Type rating for single-engine turbine (land) August 13, 1997</p> <p>Class 1 aviation medical certificate Valid until: April 27, 2013</p> <p>Total flight time 1,515hr 37min</p> <p>Total flight time on the type of aircraft 40hr 09min</p>
2.5 Aircraft Information	<p>Type: Eurocopter EC120B</p> <p>Serial number 1234</p> <p>Date of manufacture July 20, 2001</p> <p>Certificate of airworthiness No. Dai-2011-497</p> <p>Valid until: December 1, 2012</p> <p>Category of airworthiness Rotorcraft, Normal N</p> <p>Total flight time 683hr 39min</p>
2.6 Meteorological Information	<p>According to the statements of the pilot, the meteorological conditions at the accident site were as follows:</p> <p>Around 16:00 Sunny weather, Northeast wind at 2-3 kt</p>

Visibility more than 10 km, Temperature 28°C	
2.7 Other Information	<p>After transporting the helicopter to a hanger, investigators examined major components such as flight control and the engine. No anomalies were found except the damage (cf. 2.3) caused by the accident.</p> <p>The helipad, covered with trimmed grass grown on sand, occupies a corner of the club. It is almost flat with slight ups and downs. The ground is soft enough to allow the rear end of the skid to penetrate grass roots as it is a flat panel. No possible obstacles which trap skids existed. Each skid rear end is fitted with a plate (about 30 cm long, 5 cm wide, 1 cm thick). There was a trace of turf in the size of skid rear end nearly came off on the ground around where the helicopter had settled on.</p> <p>The helicopter has a clockwise main rotor rotation as viewed from above; therefore, the left skid leaves the ground first followed by the right skid. However, the order varies depending on the center of gravity, ground inclination, the control inputs into the wind and other factors.</p> <p>According to the logbook, the pilot experienced 19 landings and take-offs at the helipad by the day of the accident. He stated the hovering characteristics of the helicopter as follows: the right skid rear end touches the ground first while settling; it leaves last during liftoff.</p> <p>The pilot had no experience of post-landing relocation at the helipad on the helicopter before.</p>



A trace of turf came off

3. ANALYSIS

3.1 Involvement of Weather	No
3.2 Involvement of Pilots	Yes
3.3 Involvement of Helicopter	No

<p>3.4 Analysis of Findings</p>	<p>After settling on the helipad, the pilot felt that the helicopter was not upright. He hovered, backed up about one meter to the right, and settled on the ground. In light of the hovering characteristics of the helicopter mentioned by the pilot (the right skid rear end touches the ground first while settling, it leaves last during a liftoff) and there was a trace of turf in the size of skid rear end nearly came off on the ground around where the helicopter had settled on, it is possible that the right skid rear end slid under the grass roots when it resettled. It is highly probable that as the result of the following events the helicopter rolled over to the right pivoting around the trapped right skid rear end: the pilot may have failed to find the trapped skid rear end under the grass roots; when the helicopter was light on the skids before liftoff, he applied small pedal inputs and felt that the skids were caught; he applied a small left/right rudder inputs to wiggle the helicopter to confirm skid restraints; he unintentionally raised the collective pitch as usual.</p> <p>The accident could have been prevented if the pilot had: terminated the settling of the post-landing relocation sliding forward; confirmed the skid constraints during the preflight exterior check; aborted the liftoff sequence when he felt skids being trapped.</p>
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4. PROBABLE CAUSES

<p>In this accident, the helicopter rolled over to the right pivoting around the right skid rear end which was trapped by the grass roots during its transition to a liftoff from the grass helipad and sustained damage.</p> <p>It is highly probable that the pilot's following actions contributed to the occurrence: he raised the collective pitch unintentionally when he tried to wiggle the helicopter to confirm the skid restraints applying rudder inputs, as he sensed the slight rigidity of skids when the helicopter was light on the skids before liftoff.</p>
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