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AIRCRAFT SERIOUS INCIDENT
INVESTIGATION REPORT

PRIVATELY OWNED
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April 25, 2014

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 prevent future accidents and incidents. 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 SERIOUS INCIDENT INVESTIGATION REPORT

RUNWAY OVERRUN
PRIVATELY OWNED PIPER PA-28-161, JA3919
RYUGASAKI AIRFIELD
RYUGASAKI CITY, IBARAKI PREFECTURE, JAPAN
AT 11:50 LOCAL TIME, JUNE 30, 2013

April 11, 2014

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 two investigators on June 30, 2013, to investigate this serious incident. An accredited representative of the United States of America, as the State of Design and Manufacture of the airplane involved in this serious incident, participated in the investigation. Comments from parties relevant to the cause of the serious incident were invited. Comments from the relevant State were invited.

2. FACTUAL INFORMATION

2.1 History of the Flight

According to the statement of the captain, the history of the flight is summarized as follows.

A privately owned Piper PA-28-161, registered JA3919, took off from Ryugasaki Airfield at 11:07 Japan Standard Time (JST, UTC+9 hours) on Sunday, June 30, 2013, to conduct a familiarization flight, with four people on board, consisting of the captain and three friends of the captain. After a flight around the Airfield, the airplane performed two touch-and-go landings at the Airfield, and upon the third final landing, unable to stop within the runway, it stopped in a grass overrun area.

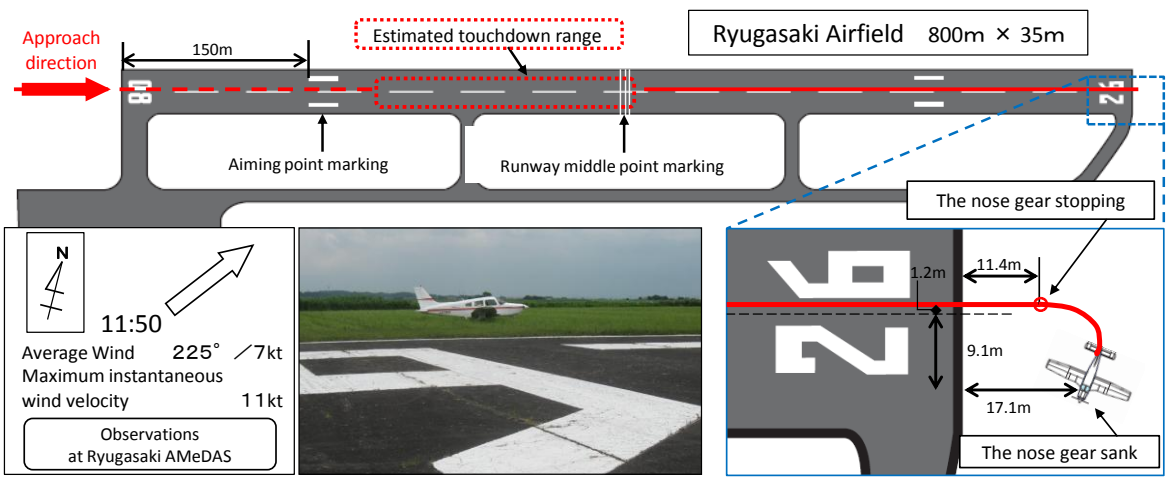
The captain belongs to the flying club that manages the airplane at the Airfield, and made flights about once a month. Before the flight on the day, the captain confirmed the weight and the center of gravity of the airplane with the four people on board, as well as performing an exterior inspection and engine starting check, and confirmed that there were no anomalies.

Before starting the touch-and-go landings, the captain obtained wind

information (180°, 5kt) from the Ryugasaki Flight Service (a radio station operated by the administrator of the airfield). The airplane performed landings with full flaps at 40° the first time, and with flaps at 25° the second time on active runway 08. During the two touch-and-go landings, the captain felt a weak wind blowing from the right that had little effect on the landings. At the time of the third approach, the flaps were set at 25°, as the usual path (angle of approach), until the final approach leg. The captain intended to make a landing with full flaps, but he did not change the flaps due to a lift in the path after entering the final approach leg, and confirmed the initial approach speed of 70kt with power reducing to idle, approaching the aiming point marking. When he slowly began to flare (pitching up of the nose of an aircraft) at an altitude of about one meter above ground level, the airplane came close to floating; therefore, he turned back the flare, and then began to flare again. However, the airplane descended slowly, resulting in making the touchdown point farther away.

On the runway at the Airfield, an aiming point marking (3m in width and 22.5m in length) is provided at each approach end and indicates the landing aiming point at 150m from the runway threshold. According to the captain, he tried not to touchdown on the near side of the marking, and regularly made an approach aiming at it and began to flare, normally resulting in making the touchdown point farther from it. According to the captain, the touchdown point at that time overreached the aiming point marking, but did not over reach the runway middle point marking.

After touching down, the captain always applied the brake gradually in consideration of stopping the airplane as calmly as possible, without strongly applying the brakes from the beginning. At this time, he applied the brakes gradually as usual, but felt like the brake was working poorly and like the airplane was being pushed from behind. The captain applied the brakes as strongly as possible without locking the gears, but he was not able to stop the airplane within the runway, and released the brakes after entering the grass. The airplane stopped in a grass overrun area about 11m out of the runway.



	The airplane began to taxi from the position it stopped to the runway in a clockwise direction, but after taxiing about 10m it became impossible to taxi, with the nose gear sinking in mud. This serious incident occurred at 11:50.
2.2 Injuries to Persons	None
2.3 Damage	None
2.4 Personnel Information	(1) Captain Male, Age 50 Private pilot certificate (Airplane) Type rating for Single-engine (Land) May 22, 2003 Class 2 aviation medical certificate Validity date: March 20, 2014 Total flight time 128 hr 08 min Total flight time on the type of aircraft 83 hr 08 min
2.5 Airplane Information	(1) Type : Piper PA-28-161 (Serial number : 28-8316040, Date of manufacture : January 11, 1983) Certificate of airworthiness No. TO-24-377 Validity date: November 7, 2013 Category of airworthiness Airplane, Normal N, Utility U Total flight time 2,227 hr 32 min (2) Weight and Balance When the serious incident occurred, the weight of the airplane was estimated to have been 2,390 pounds and its position of center of gravity (CG) was estimated to have been 89.9 inches aft of datum line, both of which were estimated to have been within the allowable range (maximum landing weight of 2,440 pounds, and CG 87.8 to 93.0 inches corresponding to the weight of the airplane at the time of the serious incident). (3) Landing Ground Roll Distance (LGRD) The performance figure in Section 5 of the flight manual for the airplane describes the LGRD with the maximum braking, as well as with flaps 40°, power off, paved, level and dry runway. In the case of the outside temperature and estimated weight at that time, the LGRD was about 630ft (192m) and 830ft (253m) in the calm and with a 5kt of tailwind component respectively. (The LGRD with flaps at 25° is not described.) (4) Special Inspection after the Occurrence of the Serious Incident The special inspection instructed by the manufacturer was conducted by the contractor of the periodic inspection of the airplane, but there were no failures or anomalies.

2.6 Meteorological Information

(1) Observations of Wind Direction and Velocity at the Airfield Observed by the Administrator of the Ryugasaki Airfield

- Altitude: 2.3m
- Height of anemometer: About 4m above ground

09:00 Wind direction: 090°, Wind velocity: 3kt

12:00 Wind direction: 180°, Wind velocity: 5kt

(2) Observations of Wind Direction and Velocity, and Temperature at Ryugasaki Automated Meteorological Data Acquisition System (AMeDAS), Japan Meteorological Agency, Located about 3km West-southwest of the Airfield at an Altitude of 4m

- Height of anemometer: 9.4m above ground
- Average wind direction for the preceding 10 minutes (16 directions were rounded upwards to integer degrees)
- Average wind velocity for the preceding 10 minutes and maximum instantaneous wind velocity within the preceding 10 minutes (units were converted into kt from m/s)

Time	11:20	11:30	11:40	11:50	12:00	12:10	12:20
Average wind direction	180°	203°	203°	225°	225°	203°	203°
Average wind velocity	4 kt	6 kt	4 kt	7 kt	7 kt	5 kt	4 kt
Maximum instantaneous wind velocity	9kt	10kt	8kt	11kt	10kt	8kt	7kt
Temperature	26.1°c	26.5°c	26.6°c	26.1°c	26.0°c	26.1°c	26.4°c

3. ANALYSIS

3.1 Involvement of Weather	Yes
3.2 Involvement of Pilots	Yes
3.3 Involvement of Airplane	None
3.4 Analysis of Findings	(1) Landing with Overreached Touchdown Point The airplane came close to floating when it begun to flare slowly at an altitude above ground level of about one meter at the time of its third approach; therefore, it is probable that the air speed at this time was higher than usual. According to the statement of the captain, he turned back the flare and then flared again; however, the airplane descended slowly, resulting in making the touchdown point farther away. Therefore, it is probable that the airplane touched down after greatly overreaching the aiming point marking. According to the statement of the captain, he maintained the flaps

at 25° in order to correct the lifted path, and made the power idle. It is probable that though deceleration became insufficient under the situation of being impossible to reduce the power any further in spite of confirmation of the initial approach speed of 70kt, the captain intended to approach the aiming point marking. According to the flight manual, touching down at a safe speed as minimum as possible by using full flaps at 40° is usually desired, and correction of path is required in accordance with the deceleration. In case of failing to correct the path and finding it impossible to land at the aimed touchdown point, it is necessary to execute a go-around immediately.

(2) Recognition of Touchdown Point

According to the captain, he regularly made the aiming point marking the target for approaching, normally resulting in making the touchdown point farther from it. As for the touchdown point at that time, it was between the aiming point marking and the runway middle point marking inclusive by his recollection, but he could not specify it in any further detail.

(3) Involvement of Weather

According to the observations at Ryugasaki AMeDAS, where it is geographically considered that nearly the same wind blew as that at the Airfield, the average wind direction was southerly wind at 180° at 11:20, and changed to be a south-westerly wind at 225° at 11:50, when the airplane landed. As for the wind velocity, the average was 7kt and the maximum instantaneous was 11kt; therefore, it is somewhat likely that there was a tailwind component exceeding 5kt against the airplane with a true heading of 086° during landing. Moreover, as it was also indicated by the statement of the captain that the path lifted after entering the final approach leg at the time of the third approach, which had been normal until then, it is probable that there was a tailwind component which caused an increase in ground speed.

(4) Breaking after Touchdown

As for the way of using the brakes after touchdown, after entering the grass, the captain tried to conduct effective braking, in order not to lock the gears, such as by releasing the brakes. While trying to stop calmly, it is probable that he gave consideration to a comfortable ride. Under the situation in which the LGRD was increasing due to an increase in ground speed, in addition to less residual distance of the runway caused by making the touchdown point farther away, it is probable that such way of using the brakes lacked adequacy.

The distance from the runway middle point marking to the runway end is 400m, more than 1.5 times the LGRD of 253m described in the flight manual (flaps at 40°, tailwind component of 5kt). Judging from this and the fact that there were no failures or anomalies in the airplane, it is probable that, if the touchdown point did not reach the runway middle point marking as the captain recalled, the airplane could

	have stopped within the runway by the appropriate use of the brakes in accordance with the residual distance of the runway. (5) Consideration of Tailwind According to the LGRD described in the flight manual for the airplane, an increase in the LGRD caused by a tailwind of 5kt is about 30%. In case of landing with a tailwind, a judgment on landing and the way to use the brakes in consideration of these factors are required.

4. PROBABLE CAUSES

It is probable that the serious incident occurred because the airplane overran the runway due to the inadequate way of using the brakes, in addition to landing with making the touchdown point farther away.

As for landing with making the touchdown point farther away, it is probable that deceleration became insufficient due to the operation of correcting the lifted path.

Moreover, it is somewhat likely that the existence of a tailwind component against the airplane became a factor of the lifted path and the increase in the LGRD.