AA2023-5

AIRCRAFT ACCIDENT
INVESTIGATION REPORT

Japan General Aviation Service Co., Ltd. (JGAS)
J A 0 1 T C

August 31, 2023

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 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.

TAKEDA Nobuo
Chairperson
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.

《Reference》

The terms used to describe the results of the analysis in "3. ANALYSIS" of this report are as follows.

i) In case of being able to determine, the term "certain" or "certainly" is used.
ii) In case of being unable to determine but being almost certain, the term "highly probable" or "most likely" is used.
iii) In case of higher possibility, the term "probable" or "more likely" is used.
iv) In a case that there is a possibility, the term "likely" or "possible" is used.

AIRCRAFT ACCIDENT INVESTIGATION REPORT

August 4, 2023
Adopted by the Japan Transport Safety Board
Chairperson TAKEDA Nobuo
Member SHIMAMURA Atsushi
Member MARUI Yuichi
Member SODA Hisako
Member NAKANISHI Miwa
Member TSUDA Hiroka

Company	Japan General Aviation Service Co., Ltd. (JGAS)
Type, Registration Number	Cirrus SR20, JA01TC
Accident Class	Damage to Aircraft during Landing
Date and Time of the Occurrence	At about 11:05 Japan Standard Time (JST: UTC+9 hours), December 26, 2022
Site of the Accident	On Runway at Amakusa Airfield, Kumamoto Prefecture (32°28'50" N, 130°09'45" E)

1. PROCESS AND PROGRESS OF THE ACCIDENT INVESTIGATION

Summary of the Accident	On December 26, 2022, the aircraft tried to execute a go-around when approaching Runway 31 at Amakusa Airfield in Kumamoto Prefecture for touch-and-go training, but touched down on the runway on the nose landing gear first, resulting in damage to the airframe.
Outline of the Accident Investigation	The Japan Transport Safety Board (JTSB) designated an investigator-in-charge and an investigator on December 26, 2022 to investigate this accident. Comments were invited from the parties relevant to the cause of the accident and were invited from the Relevant State.

2. FACTUAL INFORMATION

Aircraft Information

Aircraft type: Cirrus SR20
Serial number: 2268 Date of manufacture: August 6, 2014
Airworthiness certificate: No.Dai-2022-087 Validity: May 22, 2023

Personnel Information

(1) Captain: Age: 72
Airline transport pilot certificate (Airplane) May 1, 2015
Pilot competency assessment
Expiration date of piloting capable period May 8, 2023
Total flight time 18,863 hours 10 minutes

Flight time on the type of the aircraft	805 hours 57 minutes
(2) Trainee A:	Age: 36
Commercial pilot certificate (Airplane)	March 23, 2021
Pilot competency assessment	
Expiration date of piloting capable period	March 23, 2023
Total flight time	350 hours 22 minutes
Flight time on the type of the aircraft	16 hours 21 minutes

Meteorological Information (Aviation Routine Weather Report)

11:00 Wind direction 020°; Wind velocity 5 kt; Wind direction fluctuation 340° - 060°
Prevailing visibility: 10 km or more
Cloud: Amount 1/8, Type Cumulus, Cloud base 2,500 ft
Temperature 9°C; Dew point 2°C; Altimeter setting (QNH): 30.20 inHg

Event Occurred and Relevant Information

(1) History of the flight

At 10:31 on December 26, 2022, the Aircraft was piloted by Trainee A and took off from Kagoshima Airport for the cross country flight training to Amakusa Airfield and touch-and-go training at the Airport that the Company stipulated as a special training, with the captain as an instructor in the left pilot seat and two trainees such as Trainee A in the right pilot seat and Trainee B in the right aft seat.

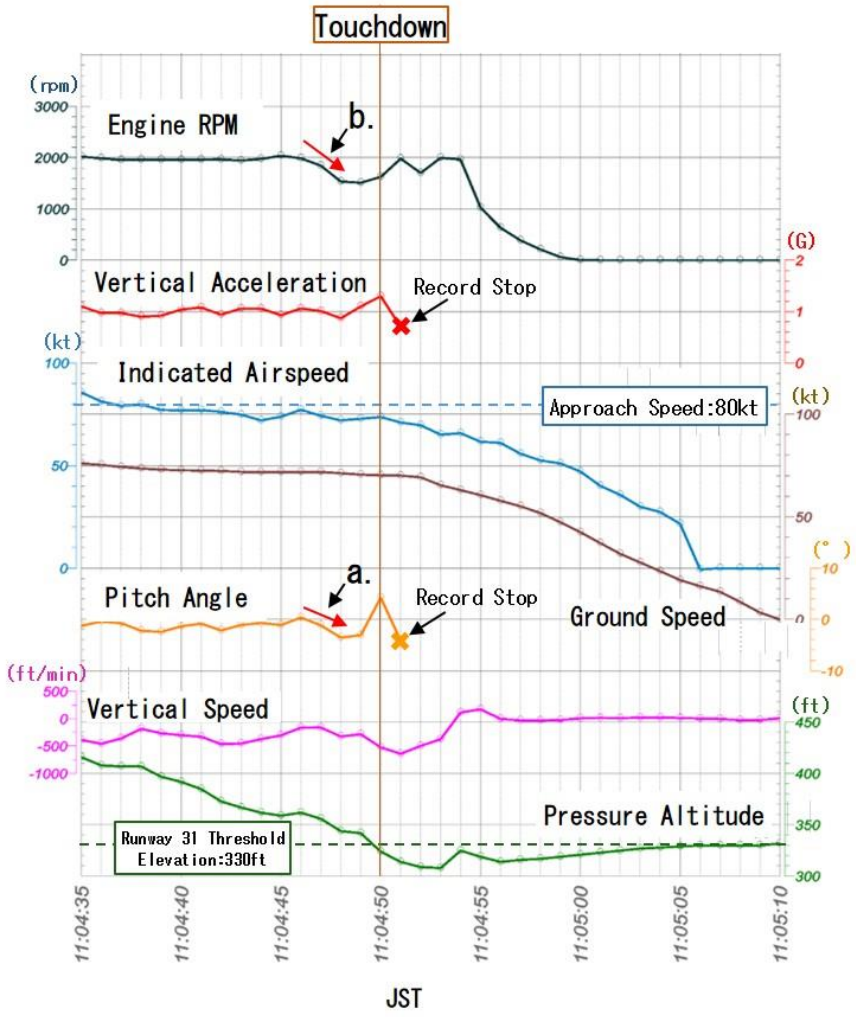

Figure 1: Records of Flight Data Logging Function

On the day before the accident occurred, this training was decided to be conducted due to the circumstances of the training planning. Trainee A, who was coming up training to obtain a flight instructor certificate, prepared for the training with a decision to fly in the right pilot seat. Although Trainee A had ever five or six take-offs and landings in the right seat on the other type of aircraft, it was the first time to fly in the right seat on Cirrus SR20 model, thus Trainee A felt something wrong with the operations in the right pilot seat from starting the engine.

Trainee A felt something wrong about operating the power lever with the left hand

unfamiliar with the controls, the descent path and the speed were unstable when approaching Runway 31 of Amakusa Airfield, therefore, Trainee A was instructed by the captain about the descent path and the speed several times.

The aircraft was approaching the threshold of Runway 31, but the descent path was low and the speed was also below the approach speed, therefore, the captain instructed Trainee A to execute a go-around by saying, "Go around." However, as the aircraft's nose went down (see Figure 1: Records of Flight Data Logging Function *1 a.), the captain said again, "Go around" and tried a take-over, but the aircraft touched down on the nose landing gear first and traveled on the runway with a part of nose landing gear including the tire fractured, and then was disabled on the runway. Trainee A stated that Trainee A felt as if having pushed the control yoke forward when trying to execute a go-around following the captain's instruction.

Figure 2: Estimated Flight Route and the Accident Site

The captain and two trainees disembarked from the aircraft by themselves, and no one was injured.

(2) Damage to the Aircraft

The nose landing gear of the Aircraft was fractured and the detached one was found in the grass area on the south side of the runway. In addition, the right main landing gear tire cover was broken, struck marks were found on the lower part of fuselage and the lower surface of the left horizontal stabilizer, the bent backward and the scratched marks were found on the three propeller blades.

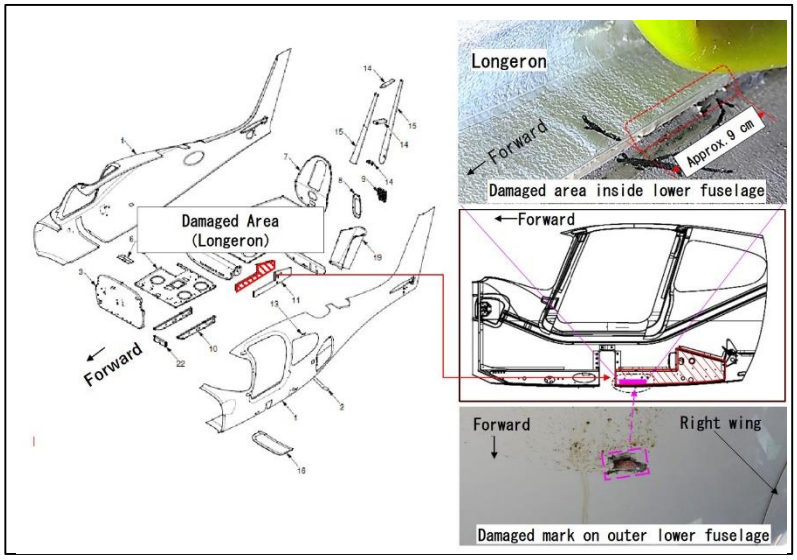

Figure 3: Damaged Area at the lower fuselage

Besides, in the inspection of the inner fuselage, as shown in Figure 3, at the right-side central lower structure of the fuselage (Longeron), damage equivalent to major repair (separation of the adhesive surface between the fuselage outer skin and Longeron) was found.

(3) Go-around Operations

Regarding go-around operations, the Airplane Flight Manual of the Aircraft includes the following descriptions in Chapter 4, Normal Procedures for Balked Landing / Go-Around

*1 "Flight Data Logging Function" refers to the function that the avionics system (Garmin G1000) installed in the aircraft automatically records the flight data and engine data.

Operations (Excerpt).

1. Autopilot・・・・・・・・・・・・・・DISENGAGE

2. Power Lever・・・・・・・・・・FULL FORWARD

3. Flaps・・・・・・・・・・・・・・・・・・・・50%

4. Airspeed・・・BEST-ANGLE-OF-CLIMB SPEED (81 to 83 KIAS[*2*]*)*

(4) Cockpit of the Aircraft

A Primary Flight Display (PFD) is installed in front of the left seat and indicates the information (Attitude, Airspeed, Heading, Altitude and others) required for a flight. A Multi Function Display (MFD) is installed next to the right of the PFD and indicates the system information such as the engine and electrical system and the information required for navigation.

Figure 4: Cockpit of the Aircraft

The control yoke of the aircraft is a side control type (see Figure 4). Fore and aft movement of the control yoke controls the pitch axis, and tilting it to the left and right controls the roll axis.

(5) The Company's Regulations regarding the Flight in the Right Pilot Seat

The Company mainly employed pilots with a flight instructor certificate and trained them, therefore the Company did not stipulate procedures when those pilots, who would obtain a flight instructor certificate after the employment, would fly in the right seat as a trainee.

3. ANALYSIS

(1) Situation at the Time of Touchdown

The JTSB concludes that it is most likely that because the aircraft's nose went down when the go-around was attempted as instructed by the captain, the aircraft touched down on the nose landing gear first, and then was disabled on the runway.

Regarding the fact that the aircraft's nose went down, it is probable that because Trainee A pushed the control yoke forward when attempting to execute a go-around.

Regarding that Trainee A having pushed the control yoke forward, it is possible that because pilots would move the power lever forward with the right hand when executing go-around operations in the left pilot seat, Trainee A, who flew in the right pilot seat of Cirrus SR20 for the first time, gave the control yoke which Trainee A operated with the right hand the input to the power lever. In addition, it is possible that because pilots would pull the control yoke when executing go-around operations in the left pilot seat, Trainee A gave the power lever which Trainee A operated with the left hand the input to the control yoke, pulling it backward, and it is probable that the decrease in engine power of the aircraft (see Figure 1 b.) contributed to the nose-down of the aircraft.

The captain instructed the Trainee A to execute a go-around again because the Aircraft's nose went down when instructed Trainee A to execute it, however, the captain should probably take over the control when the Aircraft's nose went down taking into consideration the time to the touchdown.

(2) Trainee's Flight Operations on the Right Pilot Seat

*2 The "KIAS" refers to the one that displays the indicated airspeed at kt (knot) unit.

The JTSB concludes that it is probable that Trainee A did not sufficiently prepare to fly in the right seat taking into consideration regarding the differences in the control and how to see the instruments in the left and the right pilot seat because the decision to conduct the training was made on the day before the accident.

Furthermore, it is most likely that the Company did not stipulate concrete procedures regarding education/training for the pilots like Trainee A to newly obtain a flight instructor certificate and the decision on whether the flight training in the right seat could conduct or not was left to the instructor, in addition, it is probable that the instructor did not sufficiently prepare for the flight training in the right pilot seat by the trainee.

(3) Damage to the Aircraft

The JTSB concludes that it is highly probable that when the aircraft touched down on the nose landing gear first, its propellers touched on the runway surface and were damaged. After that, it is highly probable that a part of the nose landing gear was broken along with the tire, and it hit the tire cover and then lower fuselage and the lower surface of the left horizontal stabilizer. Furthermore, it is highly probable that the lower structure of the right central fuselage (Longeron) was damaged when the broken nose landing gear hit the lower fuselage.

4. PROBABLE CAUSES

The JTSB concludes that the probable cause of this accident was most likely that because the nose went down when the Aircraft tried to execute a go-around, the lower structure of the right central fuselage (Longeron) was damaged when the broken landing gear hit the lower fuselage after the Aircraft touched down on its nose landing gear first on the runway.

Regarding the fact that the aircraft's nose went down, Trainee A probably pushed the control yoke forward when trying to execute a go-around, and it is possible that Trainee A in the right pilot seat moved the control yoke handled by the right hand forward instead of the power lever.

5. SAFETY ACTIONS

(1) Safety Actions Required

a. It is probable necessary for the Company to provide an environment conducive to flight training after sorting out the differences in flight operations between the right and left pilot seats including that when trainees conduct flight operations in the right pilot seat, their left and right hands operate different devices, and how different looks have the instrument displays between the right and left pilot seats, and preparing well in advance.

b. It is necessary for the Company to verify the points to be noted when a trainee takes flight training in the right pilot seat, clarify the procedures for the trainee to control the airplane sitting in the right pilot seat as well as reeducate about the takeover by the instructor during the flight training.

(2) Safety Actions Taken after the Accident

The Company issued the notice of the Director of the Flight Operation Division, "Reconfirmation of the Training Techniques (Take Over) during Flight Training" which made the flight instructors know the training techniques related to take-over.

In addition, the Company issued the notice of the Director of the Flight Operation Division "Operation Procedures in the Right Pilot Seat", to provide the trainees with the knowledge and experience required for the flight in the right pilot seat, established the syllabuses to establish the training to obtain the flight instructor certificate.