

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24LA124

WRECKAGE EXAMINATION

March 19, 2024

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. WRECKAGE EXAMINATION.....	3
C. SUMMARY.....	3
D. DETAILS OF THE EXAMINATION.....	4
1.0 ACCIDENT SITE	4
2.0 AIRFRAME EXAMINATION.....	5
2.1 Fuselage.....	5
2.2 Empennage	6
2.3 Wings	7
2.4 Landing Gear.....	8
2.5 Cockpit.....	8
2.6 Survivability.....	9
2.7 Fuel/Fuel System.....	10
3.0 ENGINE EXAMINATION	11
4.0 PROPELLER EXAMINATION	12
5.0 AIRCRAFT INFORMATION	13

A. ACCIDENT

Location: Sanford, FL
Date: February 27, 2024
Time: 1622 EST
2122 Z
Airplane: Cirrus SR20

B. WRECKAGE EXAMINATION

IIC Ryan Enders
National Transportation Safety Board
Washington, DC

Robert Melcher
Federal Aviation Administration
Orlando, FL

Mark Haroldson
Cirrus Aircraft
Duluth, MN

J Ferrell
Continental Aerospace Technologies
Mobile, AL

Aaron Bowie
L3 Harris
Sanford, FL

C. SUMMARY

On February 27, 2024, at 1622 eastern standard time, a Cirrus SR20, N485DA, was substantially damaged when it was involved in an accident near Sanford, Florida. The pilot receiving instruction was seriously injured, and the flight instructor and back seat observing pilot were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The flight departed Sanford International Airport (SFB), Sanford, Florida, at 1718 for an instrument training lesson. On the return flight to SFB, the pilot under instruction was "under the hood" conducting an instrument approach to runway 9R. The pilot under instruction stated that the tower controller "switched them back and forth between 9R and 9L" prior to the flight instructor requesting runway 9C. When the instructor advised the pilot to remove the hood, the pilot immediately observed

that the airplane was low on the instrument approach path and requested that the flight instructor take the controls. The instructor acknowledged and took control of the airplane and applied power to correct the flight path. Shortly thereafter, the engine lost all power. The instructor attempted to restore power by manipulating the throttle; however, the engine did not regain power. The airplane landed short of the runway, collided with a parked, unoccupied, airplane that belonged to the same flight training facility, and came to rest on the airport ramp.

A post-accident examination of the airframe and the engine were conducted on March 19, 2024, at the L3 Harris campus in Sanford, FL. An engine examination was completed by a representative from Continental Aerospace Technologies and no mechanic discrepancies were noted. The airframe was examined by a representative from Cirrus Aircraft and no discrepancies with the airframe were noted.

The fuel selector was documented in the right tank position. The right fuel tank was not breached by the accident sequence. Approximately one-quarter of a gallon of fuel was removed from the right-wing tank.



Airplane Overview from the Left Side

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

N485DA impacted a parked Piper airplane on the L3 Harris ramp, short of runway 9C. Airport surveillance footage captured the accident events. Airport emergency personnel were at the ramp, about 50 feet, from the parked Piper airplane when the accident occurred for an unrelated event. Propeller ground scars

were noted on the concrete apron. The airplane skidded across the apron before stopping in grass.

2.0 Airframe Examination

An airframe examination was conducted by the Cirrus Air Safety investigator. Flight control continuity was confirmed to the rudder, elevator, and ailerons. No mechanical defects or discrepancies were noted with the airframe prior to the accident events.



Airframe Overview (Courtesy of Cirrus Aircraft)

2.1 Fuselage

Extensive thermal damage was observed on the aft left portion of the fuselage structure. Damage to the bottom of the fuselage was observed from the airplane skidding as a result of the landing gear collapsing. Cracking was found at the spar tunnel on the right hand side of the fuselage.



Thermal Damage to the Fuselage

2.2 Empennage

The empennage was mostly undamaged with minor thermal signatures noted from the post-accident fire. The vertical stabilizer, rudder, horizontal stabilizer, and elevators remained intact.



Right Side of the Empennage

2.3 Wings

The left wing was damaged at the bottom near the wing root as a result of the left main landing gear shearing. The damage to the left wing resulted in a breach of the left fuel tank and source for the post impact fire. The right wing was damaged on the bottom near the wing root. Leading edge damage was observed on the last three feet of the outboard portion of the leading edge. The right wing was tested for breaches by adding 5 gallons of water to the tank. There was no evidence of a breached right fuel tank. The right wing displayed significant damage as a result of contacting the parked PA-28. The right wing flap had been pushed towards the right wing tip and was jammed against the aileron.

The flap actuator measured just under 4", indicating that the flaps were in the "up" position at the time of the impact. The end of the actuator had been broken off as the flaps moved above "full up" during the impact sequence.



Inner Left Wing and Flap



Right Wing

2.4 Landing Gear

The airplane is equipped with fixed tricycle landing gear. The nose gear and both main landing gear collapsed as a result of impact forces. The right main landing gear was liberated from the mounting structure. The left main landing gear had breached the left wing fuel tank and remained pressed against the bottom of the left wing. The nose gear strut separated just above the nose landing gear castering mount.

2.5 Cockpit

The airplane MFD and PFD were previously sent to the lab in Washington D.C. The Hobbs meter reading is 5914 and the Flight meter reading is 2424. The flaps selector is at 0, but the physical flaps position is at 50%. The throttle and the mixture levers were found in the idle positions. Cable continuity of the throttle, mixture, and propeller were confirmed with full travel verified. The fuel pump toggle lever was in the off position. The fuel selector was on the right tank. The head liner was removed to facilitate cutting the parachute rocket cable. A fire extinguisher remained installed and unused by the rudder controls of the front left pilot seat. The front seats were equipped with 4-point shoulder harness' with airbags that did not deploy. The rear seats are equipped with a lap and shoulder restraint.



Cockpit Overview



Cockpit from Pilot's Side (Courtesy of Cirrus Aircraft)

2.6 Survivability

The front seats are equipped with 4-point shoulder harness' and airbags. The airbags did not deploy. The front left pilot receiving instruction received a serious

back injury. The flight instructor and rear pilot rated passenger were uninjured. Both main cabin doors were functioning.

The airplane was equipped with a Cirrus Airframe Parachute System (CAPS). The rocket had been removed by a CAPS technician after the accident.

2.7 Fuel/Fuel System

As observed, the fuel boost pump was off, and the mixture control was at the idle cutoff position. An interview with first responders confirmed that the aircraft was secured by putting the boost pump "off" and moving the mixture knob to cutoff. The first responder did not manipulate the fuel selector valve. The fuel selector valve was positioned for the right tank.

The left-wing fuel tank was breached during the impact sequence. Fuel quickly escaped from the breach in the left wing and ignited during the accident sequence based on the thermal signatures on the fuselage. The right-wing fuel tank was not breached. One quarter of a gallon of fuel was removed from the right fuel tank. The fuel tank was tested for a possible breach by adding approximately 5 gallons of water into the wing and the water did not escape.

The fuel strainer was removed and was free of debris with no fuel observed. The engine drive fuel pump was removed and rotated/pumped liquid fuel. Fuel was observed at the metering valve. The fuel manifold was removed, and fuel was present. There was no obstruction of the screen in the fuel manifold.



Total Fuel Collected from the Right Wing



Fuel Controls as Found

3.0 Engine Examination

The engine rotated 720 degrees when force was applied to the propeller. Thumb compressions were established on all six cylinders. Continuity of the crankshaft to the camshaft was established throughout the engine. The oil filter housing was impact separated from the accessory housing. The filter was examined, and no contamination was noted in the element. The spark plugs were removed, and the coloration was consistent with normal engine operation. The wear was normal when compared to the Champion Aviation Check-A-Plug chart. The fuel injector nozzles were removed, and no obstructions were noted. Visual examination of the mufflers revealed no blockages. Both magnetos produced spark at the leads. The dipstick measured approximately 6 and ½ quarts of clean oil. No mechanical defects or discrepancies were noted with the engine.



Engine Overview

4.0 Propeller Examination

The three bladed Hartzell propeller remained attached to the crankshaft flange. All three blades were bent slightly forward and "S" bending consistent with engine power was observed. The propeller was not removed for further examination. The propeller governor control cable remained attached and full travel was observed.



Propeller Overview

5.0 Aircraft Information

The airplane is a 2007 Cirrus SR20, serial number 1830, N485DA registered to Aerosim Academy, Inc. and operated by L3Harris Flight Academy. The airplane was substantially damaged as a result of the accident. The airplane is stored at the L3Harris campus in Sanford, FL.



Submitted by:

Ryan Enders
Aviation Accident Investigator