Aviation Investigation Final Report

Location:	Raleigh, North Carolina	**Accident Number:**	ERA24LA191
Date & Time:	April 24, 2024, 10:10 Local	**Registration:**	N228CH
Aircraft:	Socata TBM 850	**Aircraft Damage:**	Substantial
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Business		

Analysis

The pilot executed an approach that, based on the passenger's description, was not stabilized, and the airplane touched down twice during landing. The propeller blades made contact with the runway, and the pilot decided to abort the landing because he did not think he could stop the airplane on the runway. During the subsequent takeoff and initial climb, the pilot made a tight left turn about 100 ft above ground level to avoid traffic on an intersecting runway, and the airplane entered an aerodynamic stall and impacted the ground. Postaccident examination of the airplane revealed no preimpact malfunction or deficiency that would have precluded normal operation.

Although the right main landing gear was found in the stowed position and its wheel axle and gear door showed scraping marks, an airport surveillance video showed that all three landing gear appeared to be in the down position during the airplane's takeoff after the aborted landing.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's decision to continue an unstabilized approach, which resulted in a bounced landing, and his failure to maintain proper airspeed and climb attitude after aborting the landing, which led to the airplane exceeding its critical angle of attack and resulting in an aerodynamic stall.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Descent/approach/glide path - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Not attained/maintained

Factual Information

History of Flight

Landing-flare/touchdown	Abnormal runway contact
Landing-aborted after touchdown	Abnormal runway contact
Initial climb	Aerodynamic stall/spin (Defining event)

On April 24, 2024, about 1010 eastern daylight time, a Socata TBM 850, N228CH, was substantially damaged when it was involved in an accident near Raleigh, North Carolina. The airline transport pilot was seriously injured, and the passenger received minor injuries. The airplane was operated by Medical Air, Inc. as a Title 14 *Code of Federal Regulations* Part 91 business flight.

The accident occurred following an aborted landing on runway 32 at Raleigh-Durham International Airport (RDU). According to the passenger, the airplane was "rolling" and "tobogganing…as if we were descending a hill on the snow" during the final approach. He said the airplane touched down twice, after which the pilot appeared to "turn and roll the airplane left as if to take off again." He added that the pilot made no announcements and that there was no communication between them from runway contact to the accident site. The passenger stated that, in the bank, "it felt as if the plane lost power" but that he couldn't detect if the engine had stopped.

The pilot reported that he was "not clear on all that occurred" but remembered seeing dust from when the propeller contacted the runway. He was concerned that he would not be able to stop on the runway and would collide with another airplane on the intersecting runway, so he aborted the landing. He said that, once the airplane was airborne, he made a tight left turn to avoid this traffic and the airplane stalled. The pilot said his last thought was to "unload the wing and try to flatten contact with the ground."

Airport surveillance video captured the airplane on final approach in the area consistent with the touchdown zone of runway 32. As the airplane approached the surface, it was temporarily blocked from view by a VOR antenna. Both the view obscuration and the low resolution of the video precluded determining any details about the airplane's configuration. After the airplane came back into view, a plume consistent with dust or smoke bloomed around the propeller and briefly enveloped the fuselage as it continued just above the surface for about 1,500 ft before it transitioned to a climb attitude and banked left. During the left bank, all three landing gear appeared to be in the down position. The airplane stopped its climb about 100 ft above ground

level and slowed while the left bank steepened to nearly 90° as the airplane descended to ground contact.

Review of surveillance videos and photographs revealed that the airplane impacted the ground with its left wing tip and nose almost simultaneously. The airplane rotated an additional 45°, coming to rest upright. The propeller separated from the engine and the leading edges of each of the four blades displayed gouging and chordwise scratching near the tips. The airplane sustained substantial damage to the fuselage, empennage, and both wings. The nosewheel had separated from the airframe. The left main landing gear had separated from the wing, and the right main landing gear was found stowed in the right wing. The back side of the right main landing gear wheel axle and the aft lower edge face of the landing gear door showed scrape marks.

The airplane was equipped with a Garmin GDU 1060 Electronic Flight Instrument System (EFIS) that recorded numerous flight parameters. The unit recorded the entire flight starting at 0930 and ending at 1009:18, but the impact was not recorded. A review of the last minute of data revealed that the airplane first touched down on the runway at 1008:50 at 80 kts indicated airspeed (KIAS), then initiated a climbing left turn at 1009:15 at 65 KIAS before the data ended 3 seconds later.

The airplane was equipped with a Shadin Engine Trend Monitor that capable of tracking and recording certain engine performance parameters, such as “Logon,” “Engine Start,” “Take-Off,” “Power Check Report,” “Landing Report,” and “Engine Off Log,” as well as engine parameter exceedances. The accident flight’s data file was about 22 minutes long and contained only the “Logon,” “Engine Start,” “Take-off,” and “Power Check Report” parameters. No “Landing Report,” “Engine Off Log,” nor “Exceedance Report” was recorded. At the time of the accident flight’s “Power Check,” the engine was operating normally.

Postaccident examination of the airplane revealed no malfunction or deficiency that would have precluded normal operation.

Pilot Information

Certificate:	Airline transport	**Age:**	65,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	October 20, 2023
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	16000 hours (Total, all aircraft), 2500 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Socata	**Registration:**	N228CH
Model/Series:	TBM 850	**Aircraft Category:**	Airplane
Year of Manufacture:	2006	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	356
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	August 24, 2023 Annual	**Certified Max Gross Wt.:**	7450 lbs
Time Since Last Inspection:	122 Hrs	**Engines:**	1 Turbo prop
Airframe Total Time:	4523 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	PT6A-66D
Registered Owner:	On file	**Rated Power:**	850 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KRDU,395 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	10:20 Local	**Direction from Accident Site:**	352°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 9000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	290°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	18°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wilmington, NC (KILM)	**Type of Flight Plan Filed:**	IFR
Destination:	Raleigh, NC	**Type of Clearance:**	IFR
Departure Time:	09:45 Local	**Type of Airspace:**	Class C

Airport Information

Airport:	RALEIGH-DURHAM INTL RDU	**Runway Surface Type:**	Asphalt
Airport Elevation:	435 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	14/32	**IFR Approach:**	Unknown
Runway Length/Width:	3570 ft / 100 ft	**VFR Approach/Landing:**	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	35.870384,-78.778245(est)

Preventing Similar Accidents

Prevent Aerodynamic Stalls at Low Altitude (SA-019)

The Problem

While maneuvering an airplane at low altitude in visual meteorological conditions, many pilots fail to avoid conditions that lead to an aerodynamic stall, recognize the warning signs of a stall onset, and apply appropriate recovery techniques. Many stall accidents result when a pilot is momentarily distracted from the primary task of flying, such as while maneuvering in the airport traffic pattern, during an emergency, or when fixating on ground objects.

What can you do?

- Be honest with yourself about your knowledge of stalls and your preparedness to recognize and handle a stall situation in your airplane. Seek training to ensure that you fully understand the stall phenomenon, including angle-of attack (AOA) concepts and how elements such as weight, center of gravity, turbulence, maneuvering loads, and other factors affect an airplane's stall characteristics.
- Remember that an aerodynamic stall can occur at any airspeed, at any attitude, and with any engine power setting.
- Remember that the stall airspeeds marked on the airspeed indicator (for example, the bottom of the green arc and the bottom of the white arc) typically represent steady flight speeds at 1G at the airplane's maximum gross weight in the specified configuration. Maneuvering loads and other factors can increase the airspeed at which the airplane will stall. For example, increasing bank angle can increase stall speed exponentially. Check your airplane's handbook for information.
- Reducing AOA by lowering the airplane's nose at the first indication of a stall is the most important immediate response for stall avoidance and stall recovery.
- Manage distractions when maneuvering at low altitude so that they do not interfere with the primary task of flying.
- Resist the temptation to perform maneuvers in an effort to impress people, including passengers, other pilots, persons on the ground, or others via an onboard camera. "Showing off" can be a deadly distraction because it diverts your attention away from the primary task of safe flying.
- Understand that the stall characteristics of an unfamiliar airplane may differ substantially from those of airplanes with which you have more flight experience.

See https://www.ntsb.gov/Advocacy/safety-alerts/Documents/SA-019.pdf for additional resources.

The NTSB presents this information to prevent recurrence of similar accidents. Note that this should not be considered guidance from the regulator, nor does this supersede existing FAA Regulations (FARs).

Administrative Information

Investigator In Charge (IIC):	Read, Leah
Additional Participating Persons:	Phillipe Santoro; Daher Howard Stevens; FAA/FSDO; Greensboro, NC Sebastien David; BEA France; Paris
Original Publish Date:	May 13, 2026
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=194143