



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Coldwater, MI	<b>Accident Number:</b>	CEN20CA100
<b>Date &amp; Time:</b>	02/22/2020, 1430 EST	<b>Registration:</b>	N374JW
<b>Aircraft:</b>	Commander 114	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Aerodynamic stall/spin	<b>Injuries:</b>	1 Minor, 2 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Instructional		

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## Analysis

The flight instructor reported that, during a flight review for the pilot, after takeoff and when the airplane was between about 300 and 400 ft above ground level, he reduced the throttle to idle to simulate an engine failure. The instructor expected the pilot to make a gradual right turn to land midfield on the intersecting runway. However, the pilot did not respond as expected, so the instructor assumed control, made a right turn, and lowered the airplane's nose. The pilot reported that, about the same time, he thought the airplane was too low, so he advanced the throttle full forward, but they could not arrest the descent. They felt the airplane shudder, and it experienced an aerodynamic stall and impacted terrain. A postimpact fire ensued under the engine cowling, which the passenger extinguished using the onboard fire extinguisher. The airplane sustained substantial damage to the fuselage and both wings. Examination of the propeller revealed curling and chordwise scratches on the blades, and the engine monitor indicated that the engine was turning at 2,625 rpm after the throttle was pushed forward, both of which are consistent with the engine producing high power at the time of the accident.

## Probable Cause and Findings

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

The flight instructor's inadequate communication with the pilot under review about his intention to simulate a single-engine failure and his subsequent exceedance of the airplane's critical angle of attack when the pilot did not respond as expected, which resulted in an aerodynamic stall at low altitude.

## Findings

<b>Aircraft</b>	Angle of attack - Not attained/maintained (Cause)
<b>Personnel issues</b>	Communication (personnel) - Instructor/check pilot (Cause)
	Aircraft control - Instructor/check pilot (Cause)
	Expectation/assumption - Instructor/check pilot (Cause)

## Factual Information

### History of Flight

Initial climb	Simulated/training event
Landing	Aerodynamic stall/spin (Defining event)
Post-impact	Fire/smoke (post-impact)

### Pilot Information

Certificate:	Commercial	Age:	70, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With Waivers/Limitations	Last FAA Medical Exam:	03/02/2018
Occupational Pilot:	No	Last Flight Review or Equivalent:	01/26/2018
Flight Time:	1783 hours (Total, all aircraft), 1682 hours (Total, this make and model), 1702 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft)		

### Flight Instructor Information

Certificate:	Flight Instructor; Commercial	Age:	72, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 3 With Waivers/Limitations	Last FAA Medical Exam:	03/05/2019
Occupational Pilot:	No	Last Flight Review or Equivalent:	02/19/2020
Flight Time:	3610 hours (Total, all aircraft), 54 hours (Total, this make and model), 3432 hours (Pilot In Command, all aircraft), 10 hours (Last 30 days, all aircraft)		

### Pilot-Rated Passenger Information

Certificate:	Commercial	Age:	, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):		Restraint Used:	
Instrument Rating(s):		Second Pilot Present:	Yes
Instructor Rating(s):		Toxicology Performed:	
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

## Aircraft and Owner/Operator Information

Aircraft Make:	Commander	Registration:	N374JW
Model/Series:	114 B	Aircraft Category:	Airplane
Year of Manufacture:	1993	Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	14595
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	05/01/2019, Annual	Certified Max Gross Wt.:	3250 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	1882 Hours as of last inspection	Engine Manufacturer:	Lycoming
ELT:	C126 installed, not activated	Engine Model/Series:	IO-540-T4B5
Registered Owner:	On file	Rated Power:	260 hp
Operator:	On file	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KOEB, 959 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1415 EST	Direction from Accident Site:	230°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	14 knots / 20 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	220°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.18 inches Hg	Temperature/Dew Point:	5° C / -4° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Coldwater, MI (OEB)	Type of Flight Plan Filed:	None
Destination:	Coldwater, MI (OEB)	Type of Clearance:	None
Departure Time:	EST	Type of Airspace:	Class E

## Airport Information

Airport:	Branch County Memorial (OEB)	Runway Surface Type:	Asphalt
Airport Elevation:	958 ft	Runway Surface Condition:	Dry
Runway Used:	04	IFR Approach:	None
Runway Length/Width:	3500 ft / 75 ft	VFR Approach/Landing:	Forced Landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Minor, 1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 None	<b>Aircraft Fire:</b>	On-Ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Minor, 2 None	<b>Latitude, Longitude:</b>	41.936944, -85.046667 (est)

## Preventing Similar Accidents

### Prevent Aerodynamic Stalls at Low Altitude

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.

An aerodynamic stall can happen at any airspeed, at any altitude, and with any engine power setting. Pilots need to be honest with themselves about their knowledge of stalls and preparedness to recognize and handle a stall situation. Training can help pilots fully understand the stall phenomenon, including angle-of-attack (AOA) concepts and how weight, center of gravity, turbulence, maneuvering loads, and other factors can affect an airplane's stall characteristics. The stall characteristics may be different in each type of airplane, so learn them before you fly.

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.

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. This may seem counterintuitive at low altitudes, but is a necessary first step.

See [http://www.nts.gov/safety/safety-alerts/documents/SA\\_019.pdf](http://www.nts.gov/safety/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

<b>Investigator In Charge (IIC):</b>	Joshua D Lindberg	<b>Report Date:</b>	08/27/2020
<b>Additional Participating Persons:</b>	Mike Matthews; Federal Aviation Administration; Grand Rapids, MI		
<b>Publish Date:</b>	08/27/2020		
<b>Note:</b>	This accident report documents the factual circumstances of this accident as described to the NTSB.		
<b>Investigation Docket:</b>	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=100985">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=100985</a>		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).