



# Aviation Investigation Final Report

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<b>Location:</b>	Seiling, Oklahoma	<b>Accident Number:</b>	CEN20LA321
<b>Date &amp; Time:</b>	August 1, 2020, 01:30 Local	<b>Registration:</b>	N9765C
<b>Aircraft:</b>	Piper PA28R	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Runway excursion	<b>Injuries:</b>	4 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The pilot planned to depart from a 2,435-ft-long runway, and reported that, with the three passengers and the amount of fuel onboard, the airplane was about 127 lbs below the maximum takeoff weight and required 1,700 to 1,800 ft of runway for takeoff. The pilot began the takeoff roll about 117 ft from the takeoff end of the runway with the wing flaps retracted for a normal takeoff. During the takeoff roll, the pilot noticed a sound and vibration from the engine, then about 5 seconds and 668 ft later he reduced engine power to abort the takeoff. He was unable to stop the airplane on the remaining runway and it continued off the end of the runway, over a road, and into trees. The airplane sustained substantial damage to the left wing.

Postaccident performance calculations revealed that the takeoff roll was greater than that calculated by the pilot; about 2,100 ft. A postaccident examination of the engine and airframe did not reveal any mechanical malfunctions or anomalies that would have precluded normal operation. The recorded engine and GPS data did not reveal any anomalies. The data showed that the pilot likely began to abort the takeoff, about 547 ft from the end of the runway, and likely only applied the brakes and began to significantly slow the airplane about 304 ft from the end of the runway, which was not sufficient distance to stop the airplane before exiting the runway surface.

## Probable Cause and Findings

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

The pilot's incorrect takeoff performance calculations and delayed aborted takeoff, which resulted in a runway excursion and collision with trees.

## Findings

<b>Personnel issues</b>	Performance calculations - Pilot
<b>Personnel issues</b>	Delayed action - Pilot
<b>Aircraft</b>	Takeoff distance - Capability exceeded

## Factual Information

### History of Flight

Takeoff-rejected takeoff	Runway excursion (Defining event)
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On August 1, 2020, about 0130 central daylight time, a Piper PA28R airplane, N9765C, was substantially damaged when it was involved in an accident at Seiling Airport (1S4), Seiling, Oklahoma. The pilot and three passengers were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he arrived with the same three passengers earlier that day for a rodeo event. After the rodeo, they returned to the airplane about 0100 and prepared to depart. The pilot confirmed that the takeoff weight was 2,622.8 lbs (maximum takeoff weight is 2,750 lbs) and that the airplane had 25 to 26 gallons of fuel onboard. He calculated that the airplane required 1,700 to 1,800 ft for takeoff from the 2,435-ft-long runway. He elected not to perform a short field departure and kept the flaps retracted. He added that he “still made the decision to spare every inch of runway” when he taxied the airplane into position at the end of the runway. He held the brakes and advanced the throttle, mixture, and propeller controls full forward. “When the engine was up to speed,” he let off the brakes and began the takeoff roll. He reported that during the takeoff roll, when the airspeed was about 60 knots, he noticed a sound and vibration from the engine, so he aborted the takeoff. He was unable to stop the airplane and it continued off the end of the runway, over a road, and into trees.

The responding Federal Aviation Administration inspector reported that the airplane sustained substantial damage to the left wing. A postaccident examination of the engine and airplane did not reveal any mechanical malfunctions or anomalies that would have precluded normal operation. The inspector completed takeoff performance calculations based on the accident conditions and determined that the airplane would have required about 2,000 to 2,100 ft for takeoff. He added that the pilot’s preflight performance calculations underestimated the amount of runway needed to complete the takeoff.

NTSB performance calculations determined that the takeoff roll would have been about 2,100 ft based on the accident conditions.

The airplane was equipped with an Electronics International Inc. MVP-50P engine monitor, which recorded engine and GPS data. A review of the recorded engine data revealed that the takeoff roll began about 117 ft from the takeoff end of the runway. The distance from the beginning of the takeoff roll until there was a noted reduction in engine rpm and fuel flow was 1,760 ft. The distance from the reduction in rpm and fuel flow until the first reduction in GPS speed was another 242 ft. From this point, the pilot only had 304 ft to stop the airplane before the end of the runway.

The pilot reported that he observed 60 knots on the airspeed indicator about the same time he felt the vibration then aborted the takeoff. The data showed that once the airplane achieved 60 knots, it continued down the runway another 5 seconds and 668 ft until the aborted takeoff was initiated.

The recorded engine and GPS data did not reveal any anomalies.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	34, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	December 7, 2017
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	December 19, 2019
<b>Flight Time:</b>	222.3 hours (Total, all aircraft), 10.8 hours (Total, this make and model), 178 hours (Pilot In Command, all aircraft), 67.8 hours (Last 90 days, all aircraft), 34.5 hours (Last 30 days, all aircraft), 1.2 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N9765C
<b>Model/Series:</b>	PA28R 201	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1978	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	28R-7837220
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	June 2, 2020 Annual	<b>Certified Max Gross Wt.:</b>	2750 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	7155.5 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Continental Motors
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-360-C1C6
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	201 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Night
<b>Observation Facility, Elevation:</b>	KJWG,1548 ft msl	<b>Distance from Accident Site:</b>	30 Nautical Miles
<b>Observation Time:</b>	01:15 Local	<b>Direction from Accident Site:</b>	125°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	310°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.06 inches Hg	<b>Temperature/Dew Point:</b>	18°C / 16°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Seiling, OK (1S4 )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Stillwater, OK (SWO )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	01:30 Local	<b>Type of Airspace:</b>	Class E

## Airport Information

<b>Airport:</b>	Seiling 1S4	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	1746 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	17	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	2435 ft / 38 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	3 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	4 None	<b>Latitude, Longitude:</b>	36.15139,-98.933891(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Lindberg, Joshua
<b>Additional Participating Persons:</b>	Adama Allmond; Federal Aviation Administration; Oklahoma City, OK
<b>Original Publish Date:</b>	May 6, 2022
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=101724">https://data.nts.gov/Docket?ProjectID=101724</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).