



Aviation Investigation Final Report

Location:	Kernville, California	Accident Number:	WPR17LA088
Date & Time:	April 20, 2017, 18:59 Local	Registration:	N9975D
Aircraft:	Piper PA 22-150	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	3 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airline transport pilot reported that, shortly after takeoff for a personal, local flight, during which he applied full throttle, as the airplane reached about 100 ft above ground level (agl) or less, and with usable runway behind the airplane, he noted that the engine power was decreasing, and that the airplane was not climbing as expected. Despite the pilot's checking the controls and confirming they were in their correct positions, the airplane continued to lose altitude. He realized that the engine was not producing sufficient power to climb to or maintain 75 ft agl and added that he maintained a "high deck angle" because he was "trying to maintain lift without stalling." He then turned toward an open clearing for an emergency landing as the airplane continued to lose altitude. During the turn, the main landing gear wheels clipped a tree right before the clearing, followed by the airplane nosing over and coming to rest inverted.

The passengers reported that the airplane departed midfield with a "very high...angle of attack," which did not fluctuate even during the stall, and that he never lowered the airplane's nose. One of the passengers stated that the engine sounded normal and ran at full power throughout the flight.

The airframe and engine examinations revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation. The damage to both propeller blades exhibited leading edge gouging, S-bending, torsional twisting and chordwise striation along the length of the blade, which is consistent with the production of engine power. Despite the pilot's reports about an engine issue, based on the witness statements and engine examination results, the engine likely did not experience any in-flight issues. Rather the pilot's maintaining a high pitch angle throughout the flight likely resulted in his exceedance of the airplane's critical angle of attack and a subsequent aerodynamic stall/mush. Because the airplane's current empty weight was not available for review, gross weight at the time of the accident was not determined. Additionally, due to the modifications that had been made to the airplane, no performance information was available to review that accurately characterized the airplane's expected performance during the attempted takeoff.

Probable Cause and Findings

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

The pilot’s exceedance of the airplane's critical angle of attack, which resulted in an aerodynamic stall/mush.

Findings

Aircraft	Angle of attack - Capability exceeded
Personnel issues	Decision making/judgment - Pilot
Aircraft	Airspeed - Not attained/maintained
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Initial climb	Loss of control in flight (Defining event)
Initial climb	Collision during takeoff/land

This report was modified on 2/23/2022. Please refer to the public docket for this accident to view the original report.

On April 20, 2017, about 1845 Pacific daylight time, a Piper PA-22-150 airplane, N9975D, was substantially damaged when it was involved in an accident near Kern Valley Airport (L05), Kernville, California. The pilot and two passengers were seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that, shortly after takeoff, during which he applied full throttle, and when the airplane was about 100 ft above ground level (agl) or less and with the usable runway behind the airplane, he noticed that the engine power was decreasing, and that the airplane was not climbing as expected. He checked the throttle and mixture control, and both were full forward, and he checked the fuel selector, and magnetos, and both were positioned to the “both” setting, but the airplane continued to lose altitude. He realized that the engine was not producing sufficient power to climb to or maintain 75 ft agl and added that he maintained a “high deck angle” because he was” trying to maintain lift without stalling.” He then quickly turned toward an open, sandy spot for an emergency landing as the airplane continued to lose altitude. During the turn, the main landing gear wheels clipped a tree right before the small clearing, followed by the airplane nosing over inverted.

The two passengers reported that the airplane departed midfield with a “very high angle of attack,” which did not fluctuate even during the stall, and that the pilot never lowered the airplane’s nose. One of the passengers stated that the engine sounded normal and ran at full power throughout the flight.

A GoPro camera was recovered from the wreckage. The recording was taken from inside the airplane and began with the airplane taking off. The impact was captured at an elapsed time of about 5 minutes. The recording indicated that the engine could be heard operating until the time of impact. Views of the tachometer gage showed engine operation in the normal range.

Kern Valley Airport is not equipped with a weather reporting facility. The nearest automated weather observation system was located at the Meadows Field Airport (BFL), Bakersfield, CA about 36 nm southwest of Kernville. The 1854 weather reported a temperature of 22° C, dewpoint 7° C, and an altimeter setting of 30.12 in hg. The airport elevation at Bakersfield is 509 feet msl. The density altitude at this location was calculated as 1,347 ft.

The National Oceanic and Atmospheric Administration (NOAA) High-Resolution Rapid Refresh (HRRR) atmospheric model sounding near L05 at 1900 PDT on April 20, 2017, indicated that at 2,997 ft

mean sea level (msl), which is the lowest reading for the sounding, density altitude was calculated as 3,996 ft msl. Kern Valley airport's elevation is 2,614 ft.

During the engine examination, the engine was found still attached to the airframe via the engine mount. The carburetor had separated from the mounting flange. The two-bladed, fixed-pitch propeller remained attached to the propeller hub at the crankshaft flange. Both propeller blades exhibited leading edge gouging, S-bending, torsional twisting and chordwise striation along the length of the blades. The crankshaft was rotated by hand utilizing the propeller. Thumb compression was observed in proper firing order on all four cylinders. Mechanical and valve train continuity was established. The left and right magnetos remained securely attached to the engine at their respective mounting pads. The ignition harness was secure at each magneto. Magneto-to-engine timing was within manufacturer's limits. Both magnetos were removed and rotated manually. Each magneto produced spark at the end of the respective spark plug lead, and the drives of each magneto remained intact and undamaged. The spark plugs were removed and according to the Champion Spark Plugs chart AV-27 "Check-A Plug" the spark plug electrodes exhibited coloration consistent with normal operation.

Examination of the engine revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation.

Pilot Information

Certificate:	Airline transport; Flight instructor	Age:	37, Male
Airplane Rating(s):	Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	February 1, 2017
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	January 13, 2014
Flight Time:	(Estimated) 3300 hours (Total, all aircraft), 20 hours (Total, this make and model)		

Passenger Information

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

Passenger Information

Certificate:	Age:	Female
Airplane Rating(s):	Seat Occupied:	Rear
Other Aircraft Rating(s):	Restraint Used:	Unknown
Instrument Rating(s):	Second Pilot Present:	No
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:	Piper	Registration:	N9975D
Model/Series:	PA 22-150 160	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	22-6766
Landing Gear Type:	Tricycle	Seats:	
Date/Type of Last Inspection:		Certified Max Gross Wt.:	2000 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:		Engine Model/Series:	O-360-A4A
Registered Owner:	On file	Rated Power:	
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:	KBFL, 492 ft msl	Distance from Accident Site:	35 Nautical Miles
Observation Time:	18:54 Local	Direction from Accident Site:	242°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	10 knots / None	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	320°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.12 inches Hg	Temperature/Dew Point:	22°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Kernville, CA	Type of Flight Plan Filed:	None
Destination:	Kernville, CA	Type of Clearance:	None
Departure Time:		Type of Airspace:	Class G

Airport Information

Airport:	KERN VALLEY L05	Runway Surface Type:	
Airport Elevation:	2614 ft msl	Runway Surface Condition:	Unknown
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	2 Serious	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	3 Serious	Latitude, Longitude:	35.709167,-118.421943(est)

Administrative Information

Investigator In Charge (IIC):	Cornejo, Tealeye
Additional Participating Persons:	Troy Wise; Federal Aviation Administration; Fresno, CA
Original Publish Date:	March 4, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=95035

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](#).