



Aviation Investigation Final Report

Location:	St. Johns, Arizona	Accident Number:	WPR18LA262
Date & Time:	September 15, 2018, 15:40 Local	Registration:	N734FT
Aircraft:	Cessna 172	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	3 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he initially attempted to take off, but the airplane was not accelerating fast enough and he aborted the takeoff. The pilot then decided to take off from a longer runway at the airport. When the airplane was about 100 ft above ground level, he observed that it was not continuing to climb. The pilot-rated passenger/owner stated that the stall warning horn sounded. The airplane began to lose altitude and subsequently collided with a stand of trees. The airplane came to rest inverted and sustained substantial damage to both wings, the forward fuselage, and the empennage. The pilot reported that there were no preaccident mechanical malfunctions or failures with the airframe or engine that would have precluded normal operation and that the airplane's weight was about 50 lbs less than its maximum gross takeoff weight. The pilot-rated passenger reported that he thought that the high density altitude was the cause of the accident.

The calculated density altitude was about 8,600 ft at the time of the accident. According to the Federal Aviation Administration Koch Chart, given the surrounding temperature and field elevation, the airplane would have likely experienced a 68% decrease in the normal climb rate. Thus, it is likely that the airplane did not have sufficient airspeed to climb in those conditions.

Probable Cause and Findings

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

The pilot's inadequate preflight planning before takeoff in the high density altitude conditions, which resulted in the airplane being unable to maintain sufficient airspeed to continue to climb.

Findings

Aircraft	Climb capability - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Environmental issues	High density altitude - Effect on operation
Aircraft	Airspeed - Not attained/maintained

Factual Information

History of Flight

Initial climb	Loss of control in flight (Defining event)
Initial climb	Collision with terr/obj (non-CFIT)

On September 15, 2018, about 1540 mountain standard time, Cessna 172N airplane, N734FT was substantially damaged shortly after takeoff from St Johns Industrial Airpark (SJN), St Johns, Arizona. The commercial pilot, pilot rated passenger and one passenger were seriously injured. The airplane was registered to R2D2 LLC and operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Visual meteorological conditions prevailed for the cross-country flight, and a flight plan was not filed. The flight was originating at the time of the accident, with a reported destination as Phoenix Goodyear Airport (GYR), Goodyear, Arizona.

In a report submitted to the National Transportation Safety Board investigator-in-charge, left seat pilot-in-command reported that he initially attempted takeoff from runway 21, but when he noticed that the airplane was not accelerating [fast enough] he elected to abort the takeoff. He then decided to take off from runway 14, which had a longer runway. The pilot stated that after he took off from runway 14, the airplane ascended to about 100 ft above ground level, but then observed that the airplane was not continuing to climb. At this time the right-seat occupant, who was a rated pilot and owner of the airplane, advised the pilot to turn left, as the terrain was lower in that direction. The pilot opined that the airplane then began to sink before the airplane collided with a stand of trees in his flight path. The pilot mentioned that there were no mechanical anomalies with either the airframe or the engine which would have precluded normal operation. The pilot reported that the airplane's weight at the time of the takeoff was 50 pounds less than its maximum gross takeoff weight.

In a postaccident telephone interview with the pilot-rated owner of the airplane, he reported that during the initial climb from runway 14, and at a low altitude, the stall warning horn sounded. At this time the left seat pilot-in-command said to the right seat pilot/owner, "You better take it," which was almost immediately followed by the airplane colliding with a stand of cottonwood trees. The airplane subsequently came to rest inverted with substantial damage to both wings, the forward fuselage, and empennage. The owner stated that they had just "topped off" both fuel tanks prior to departing. The owner also stated that he thought the accident was the result of the high density altitude condition.

At 1554, the automated weather observation system located at SJN reported wind from 180° at 5 knots, sky clear, visibility 10 miles, temperature 31°C, dew point 3°C, and an altimeter setting of 30.10 inches of mercury. The SJN airport elevation is 5,737 ft. The calculated density altitude was about 8,600 ft at the time of the accident.

According to the Federal Aviation Administration Koch Chart, considering the surrounding temperature and field elevation, the airplane would have likely experienced a 68% decrease in the normal climb rate.

Pilot Information

Certificate:	Commercial	Age:	48,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	Airship; Helicopter	Restraint Used:	3-point
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	October 17, 2017
Occupational Pilot:	No	Last Flight Review or Equivalent:	October 26, 2017
Flight Time:	440 hours (Total, all aircraft), 59 hours (Total, this make and model), 332 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Private	Age:	64,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	October 12, 2017
Occupational Pilot:	No	Last Flight Review or Equivalent:	December 8, 2017
Flight Time:	547 hours (Total, all aircraft), 480 hours (Total, this make and model), 547 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N734FT
Model/Series:	172 N	Aircraft Category:	Airplane
Year of Manufacture:	1977	Amateur Built:	
Airworthiness Certificate:	Normal; Utility	Serial Number:	17268826
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	December 1, 2017 100 hour	Certified Max Gross Wt.:	2299 lbs
Time Since Last Inspection:	20 Hrs	Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Lycoming
ELT:	C126 installed, activated, aided in locating accident	Engine Model/Series:	O-320 SERIES
Registered Owner:		Rated Power:	160 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:	SJN, 5737 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	15:54 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.1 inches Hg	Temperature/Dew Point:	31°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	St. Johns, AZ (SJN)	Type of Flight Plan Filed:	None
Destination:	Goodyear, AZ (GYR)	Type of Clearance:	None
Departure Time:	15:40 Local	Type of Airspace:	Class E

Airport Information

Airport:	St Johns Industrial Airport SJN	Runway Surface Type:	Asphalt
Airport Elevation:	5737 ft msl	Runway Surface Condition:	Dry
Runway Used:	14	IFR Approach:	None
Runway Length/Width:	5322 ft / 75 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	1 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Serious	Latitude, Longitude:	34.51361,-109.370277

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	Daren P DuFriend; Federal Aviation Administration; Scottsdale, AZ
Original Publish Date:	June 8, 2020
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=98301

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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](#).