Aviation Investigation Final Report

Location:	Colorado Springs, Colorado	**Accident Number:**	WPR19TA034
Date & Time:	November 20, 2018, 09:30 Local	**Registration:**	N27LA
Aircraft:	Cessna 172	**Aircraft Damage:**	Substantial
Defining Event:	Runway excursion	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, during a touch-and-go landing, he applied full power to take off and, although the airplane departed the runway surface about 50 knots, it did not accelerate, and the airspeed decreased. The airplane began exhibiting characteristics consistent with a stall and he lowered the nose. The airplane then settled back onto the ground slightly off the left side of the runway surface and continued through a grassy field, a fence, and a ditch. The airplane nosed over and came to rest inverted, resulting in substantial damage. Witnesses reported observing the airplane in a nose-high attitude before it descended from view. The flaps were found extended to 40° at the accident site.

The density altitude at the time of the accident was about 7,386 ft, and there was an approximate 4-knot tailwind for the landing runway, which had a 1.4% upslope. According to the Federal Aviation Administration Airport/Facility directory, the opposite runway was recommended for touch-and-go landings in tailwind conditions up to 5 knots.

According to the manufacturer's takeoff performance chart, there was adequate runway available for takeoff; however, given the high-density altitude, the tailwind, and the runway upslope, the distance required to conduct a touch-and-go landing and takeoff distance were significantly increased, which resulted in the airplane’s inability to become airborne within the remaining runway.

Probable Cause and Findings

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

The pilot's decision to perform a touch-and-go landing at a high-density altitude airport, with a tailwind, and on an upsloping runway, which resulted in decreased airplane performance and the airplane's inability to become airborne within the available runway.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Climb rate - Capability exceeded
Environmental issues	Sloped/uneven terrain - Effect on operation
Environmental issues	Tailwind - Effect on operation
Environmental issues	High density altitude - Effect on operation

Factual Information

History of Flight

Takeoff	Runway excursion (Defining event)
Takeoff-rejected takeoff	Collision with terr/obj (non-CFIT)
Takeoff-rejected takeoff	Nose over/nose down

On November 20, 2018, about 0930 mountain standard time, a Cessna 172 airplane, N27LA, was substantially damaged when it was involved in an accident near Colorado Springs, Colorado. The commercial pilot and passenger sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that, after departure, they flew to a different airport and conducted three uneventful touch-and-go landings. He then proceeded to the accident airport and performed a straight-in approach to runway 33. He approached the runway at a normal speed of 60 knots with the flaps fully down and the "mixture set appropriately for the 7,000-ft field elevation"; he did not apply carburetor heat. The airplane landed, and he added full power, raised the flaps, and raised the nose to take off. The airplane became airborne about 50 knots but did not accelerate; instead, the airspeed decreased to about 45 knots. The airplane began exhibiting characteristics consistent with a stall, and he lowered the nose. The airplane settled back onto the ground slightly off the left side of the runway surface and rolled through a grassy field, a fence, and impacted a ditch. The airplane nosed over and came to rest inverted.

Witnesses reported observing the airplane in a nose-high attitude before it descended from view. Shortly thereafter, they observed people running toward the airplane.

Examination conducted by a Federal Aviation Administration (FAA) inspector revealed that the flaps were fully extended. The flap indicator in the cockpit displayed 40°.

Weather about the time of the accident was reported as wind from 130° at 4 knots, temperature 9°C, dewpoint -11°C, and an altimeter setting of 30.26 inches of mercury, which corresponded to a density altitude of about 7,386 ft. According to the FAA Airport/Facility Directory, "runway 15 is recommended for takeoff, touch and go landings when effective tailwind is less than 5 knots". The directory stated that runway 33 had an upslope of 1.4%. Runway 15/33 was 60 ft wide and about 6,000 ft long.

The takeoff performance chart in the 172M Pilot Operating Handbook indicates the following airplane configuration and environmental conditions during takeoff: Flaps up; full throttle prior to brake release; zero wind; and a paved, level, dry runway. The notes section stated, "for operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots." It further stated, "prior to takeoff from fields above 3,000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup."

Pilot Information

Certificate:	Commercial	**Age:**	76,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	December 4, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 3, 2018
Flight Time:	3156 hours (Total, all aircraft), 36 hours (Total, this make and model), 2777 hours (Pilot In Command, all aircraft), 17 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N27LA
Model/Series:	172 M	**Aircraft Category:**	Airplane
Year of Manufacture:	1975	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	17265689
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 19, 2018 100 hour	**Certified Max Gross Wt.:**	2299 lbs
Time Since Last Inspection:	66 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	9188 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C91 installed, not activated	**Engine Model/Series:**	O-320 SERIES
Registered Owner:		**Rated Power:**	160 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	Peak Aviation	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	FLY,6874 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	09:35 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.26 inches Hg	**Temperature/Dew Point:**	9°C / -11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Colorado Spring, CO (COS)	**Type of Flight Plan Filed:**	None
Destination:	Colorado Spring, CO (COS)	**Type of Clearance:**	None
Departure Time:	08:15 Local	**Type of Airspace:**	

Airport Information

Airport:	Meadow Lake Airport FLY	**Runway Surface Type:**	Asphalt
Airport Elevation:	6874 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	33	**IFR Approach:**	None
Runway Length/Width:	6000 ft / 60 ft	**VFR Approach/Landing:**	Touch and go

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	38.940555,-104.568611(est)

Administrative Information

Investigator In Charge (IIC):	Link, Samantha		
Additional Participating Persons:	Michael Aubry; Federal Aviation Administration; Denver, CO		
Original Publish Date:	September 16, 2021	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98714		