Aviation Investigation Final Report

Location:	Plant City, Florida	**Accident Number:**	ERA19LA021
Date & Time:	October 18, 2018, 14:05 Local	**Registration:**	N3631K
Aircraft:	Piper PA28	**Aircraft Damage:**	Substantial
Defining Event:	Fuel related	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he was practicing flight maneuvers before returning to the departure airport. As he approached the airport, he entered on the downwind leg of the traffic pattern for a touch-and-go landing. After the touch-and-go landing, while the airplane was climbing out and accelerating, the engine began to “sputtering” several times and then lost power completely. The pilot performed a forced landing to trees below and the airplane’s wings and fuselage were substantially damaged. Postaccident examination of the engine did not reveal evidence of any mechanical malfunctions or failures that would have precluded normal operation.

Based on the pilot’s description of the fuel onboard at the time he departed, and the duration of the flight, sufficient fuel should have been available when the loss of engine power occurred. The pilot also reported that at the time of the loss of engine power, the carburetor heat was off. He did not report activating it prior to or following the time the engine began losing power. The temperature and dew point at the time of the accident was conducive to the formation of carburetor icing. Given this information, it is likely that the loss of engine power was due to the formation of carburetor ice during the approach to landing and subsequent takeoff.

Probable Cause and Findings

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

The pilot’s failure to utilize carburetor heat in conditions conducive to the formation of

carburetor icing, which resulted in a total loss of engine power.

Findings

Environmental issues	Conducive to carburetor icing - Effect on equipment
Personnel issues	Decision making/judgment - Pilot

Factual Information

History of Flight

Initial climb	Fuel related (Defining event)
Emergency descent	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)

On October 18, 2018, about 1405 eastern daylight time, a Piper PA-28-140, N3631K, sustained substantial damage when it was involved in an accident near Plant City, Florida. The commercial pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

Before departure, the pilot conducted a preflight inspection, and no anomalies were noted. The pilot also recalled that all pre-takeoff checks were normal, and there were 6 quarts of oil in the engine. He confirmed that both fuel tanks were full, which amounted to 18 gallons in each tank. The pilot was practicing flight maneuvers that consisted of visual approaches, pattern work and landings at Plant City Airport (PCM), Plant City, Florida.

After takeoff from PCM, and about 45 minutes into the flight, the pilot switched fuel tanks from the right tank to the left tank. After finishing his flight maneuvers, he proceeded back to PCM and entered on the downwind leg of the traffic pattern for runway 10 for a touch-and-go landing. After the touch-and-go landing, while climbing out and accelerating to 85 mph, the engine “sputtered” several times. The pilot leveled off the airplane about 400 ft mean sea level and checked the engine indications and controls, with all appearing normal. The carburetor heat was off, and the pilot did not activate it before or during the loss of engine power. The engine then lost power completely. The pilot was unable to turn the airplane due to the low airspeed and performed a forced landing into the trees below. The pilot exited the airplane and waited for emergency services to arrive.

Pictures taken at the accident site showed that the airplane sustained substantial damage to the wings and fuselage. The left wing was broken away from the fuselage, and the right wing and cabin section buckled. Postaccident examination of the engine revealed that while the engine could not be test run due to damage sustained during the accident, no mechanical anomalies were discovered that would have prevented normal operation.

The weather conditions at PCM about the time of the accident included a temperature of 33° C, and a dew point of 20° C. Review of the icing probability chart contained within Federal Aviation Administration Special Airworthiness Information Bulletin CE-09-35 revealed the atmospheric conditions at the time of the accident were conducive to the formation of carburetor icing at cruise and serious icing at glide power settings.

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:**	Lap only
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:**	May 26, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 18, 2018
Flight Time:	(Estimated) 4839 hours (Total, all aircraft), 538 hours (Total, this make and model), 3000 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N3631K
Model/Series:	PA28 140	**Aircraft Category:**	Airplane
Year of Manufacture:	1967	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-23661
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 15, 2018 Annual	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:	19 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5312 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	320-E2A
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:	KPCM,152 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	18:15 Local	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	Broken / 4700 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.15 inches Hg	**Temperature/Dew Point:**	33°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Plant City, FL (PCM)	**Type of Flight Plan Filed:**	None
Destination:	Plant City, FL (PCM)	**Type of Clearance:**	None
Departure Time:	13:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Plant City PCM	**Runway Surface Type:**	Asphalt
Airport Elevation:	152 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	10	**IFR Approach:**	None
Runway Length/Width:	3950 ft / 75 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	28.000278,-82.16333(est)

Preventing Similar Accidents

Preventing Carburetor Icing

Accident involving carburetor ice stem for pilots not recognizing when weather conditions are favorable to carburetor icing and inaccurately believing that carburetor icing is only a cold- or wet-weather

problem. Pilots also may not use the carburetor heat according the aircraft's approved procedures to prevent carburetor ice formation. Carburetor icing accident can occur when pilots do not recognize and promptly act upon the signs of carburetor icing.

Be sure to check the temperature and dew point to determine whether the conditions are favorable for carburetor icing. Remember, serious carburetor icing can occur in ambient temperatures as high as 90? F or in relative humidity conditions as low as 35 percent at glide power. Consider installing a carburetor temperature gauge, if available.

Refer to the approved aircraft flight manual or operating handbook to ensure that carburetor heat is used according to the approved procedures and properly perform the following actions: 1) Check the functionality of the carburetor heat before flight. 2) Use carburetor heat to prevent the formation of carburetor ice when operating in conditions and at power settings in which carburetor icing is probable. Remember, ground idling or taxiing time can allow carburetor ice to accumulate before takeoff. 3) Immediately apply carburetor heat at the first sign of carburetor icing, which typically includes a drop in rpm or manifold pressure (depending upon how your airplane is equipped). Engine roughness may follow.

Engines that run on automobile gas may be more susceptible to carburetor icing than engines that run on Avgas.

See http://www.ntsb.gov/safety/safety-alerts/documents/SA_029.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

Investigator In Charge (IIC):	Alleyne, Eric		
Additional Participating Persons:	Loftis J Rollins; FAA/FSDO; Tampa, FL		
Original Publish Date:	August 24, 2021	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98519		

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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.