



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Melbourne, Florida	Accident Number:	ERA19LA162
Date & Time:	April 29, 2019, 13:05 Local	Registration:	N3031W
Aircraft:	Piper PA28	Aircraft Damage:	Substantial
Defining Event:	Fuel related	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor and student pilot were practicing a simulated engine failure. After completing the emergency checklist, the student added engine power to recover from the maneuver about 500 ft above the ground, but the engine did not respond. The flight instructor took control of the airplane, verified the fuel selector position, and landed. The atmospheric conditions at the time of the accident were conducive to the development of carburetor icing at glide (idle) power settings, and the instructor reported that he did not apply carburetor heat during the simulated engine-out or attempted recovery. Based on the available information, it is likely that the loss of engine power was the result of the accumulation of carburetor ice during the idle-power descent and that the use of carburetor heat would likely have prevented the loss of engine power.

Probable Cause and Findings

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

A partial loss of engine power due to carburetor icing, and the flight instructor's failure to effectively use carburetor heat while operating at an idle engine power setting in conditions conducive to carburetor icing.

Findings

Personnel issues	Lack of action - Instructor/check pilot
Aircraft	Intake anti-ice, deice - Not used/operated
Environmental issues	Conducive to carburetor icing - Effect on equipment

Factual Information

History of Flight

Maneuvering	Fuel related (Defining event)
Maneuvering	Loss of engine power (partial)
Maneuvering	Off-field or emergency landing

On April 29, 2019, about 1305 eastern daylight time, a Piper PA-28-161, N3031W, was substantially damaged when it was involved in an accident near Melbourne, Florida. The student pilot and flight instructor were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The flight instructor stated that he and the student pilot departed to a nearby practice area to train emergency procedures. At 2,500 ft, they performed a simulated loss of engine power. The student pilot established best glide speed, identified a landing spot, and completed the checklist. At 500 ft, when the student added power to recover from the maneuver, the engine did not respond. The instructor took control of the airplane and verified the correct fuel selector position. The airplane continued to descend, and he landed on a brush-covered island surrounded by swamp.

A Federal Aviation Administration (FAA) inspector traveled to the site and examined the airplane. The right wing was partially separated from the fuselage and there was leading edge damage to the right wing. The inspector noted fuel in both wing tanks. The flight instructor later reported to the FAA that he had overlooked the carburetor heat and did not apply it during the simulated loss of engine power or attempted recovery.

Review of the icing probability chart contained within Federal Aviation Administration Special Airworthiness Information Bulletin CE-09-35 revealed that the atmospheric conditions at the time of the accident were "conducive to serious icing at glide [idle] power."

Pilot Information

Certificate:	Commercial; Flight instructor; Private	Age:	38, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	January 7, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 560 hours (Total, all aircraft)		

Student pilot Information

Certificate:	Student	Age:	Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Unknown Unknown	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N3031W
Model/Series:	PA28 161	Aircraft Category:	Airplane
Year of Manufacture:	1979	Amateur Built:	
Airworthiness Certificate:	Normal; Experimental (Special)	Serial Number:	28-7916348
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	March 6, 2019 100 hour	Certified Max Gross Wt.:	2326 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	7933.6 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	C91 installed, activated, aided in locating accident	Engine Model/Series:	O-320-D3G
Registered Owner:		Rated Power:	160 Horsepower
Operator:		Operating Certificate(s) Held:	Pilot school (141)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	VRB,28 ft msl	Distance from Accident Site:	21 Nautical Miles
Observation Time:	13:05 Local	Direction from Accident Site:	123°
Lowest Cloud Condition:	Few / 2700 ft AGL	Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	13 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	70°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.14 inches Hg	Temperature/Dew Point:	28°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Vero Beach, FL (VRB)	Type of Flight Plan Filed:	None
Destination:	Vero Beach, FL (VRB)	Type of Clearance:	Unknown
Departure Time:	12:45 Local	Type of Airspace:	Unknown

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	27.844392,-80.756156

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.nts.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):	Hill, Millicent		
Additional Participating Persons:	Brian Humphrey; FAA/FSDO; Orlando, FL		
Original Publish Date:	June 1, 2022	Investigation Class:	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=99351		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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](#).