



Aviation Investigation Final Report

Location:	Franklin, North Carolina	Accident Number:	ERA19TA051
Date & Time:	November 16, 2018, 10:15 Local	Registration:	N70252
Aircraft:	Cessna E162	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The sport pilot reported that, while conducting a personal, cross-country flight and while nearing the destination airport, he reduced the engine rpm from 2,350 to 2,200 and began a slow descent from a cruise altitude of 3,500 ft mean sea level (msl) to a traffic pattern altitude of 2,800 ft msl. He added that the carburetor heat was not on at that time, and that, about 2 minutes later, he noticed that the engine had lost all power without any roughness or sputtering. The pilot turned on the carburetor heat, positioned the mixture to full rich, and confirmed that the fuel shutoff valve was not engaged; however, the engine did not respond, so he subsequently conducted a forced landing to a field, during which the right wing struck a fence, and the airplane came to rest inverted.

Postaccident examination of the airplane and the engine revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation, and the engine was successfully test run. The atmospheric conditions at the time of the accident were conducive to serious carburetor icing at cruise power, and the Pilot's Operating Handbook Descent Checklist instructed pilots to apply carburetor heat, as required, during descent. Therefore, it is likely that carburetor ice accumulated during cruise flight and that the pilot applied the carburetor heat too late to melt the ice, which resulted in the loss of engine power. The pilot stated that he did not fully understand the potentially subtle nature of carburetor ice.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's delay in applying carburetor heat, which resulted in a total loss of engine power during descent due to carburetor icing.

Findings

Personnel issues	Delayed action - Pilot
Aircraft	Fuel control/carburetor - Not specified
Environmental issues	Conducive to carburetor icing - Effect on operation

Factual Information

History of Flight

Enroute-climb to cruise	Other weather encounter
Enroute-descent	Loss of engine power (total) (Defining event)
Enroute	Attempted remediation/recovery
Emergency descent	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)
Landing	Nose over/nose down

On November 16, 2018, about 1015 eastern standard time, a Cessna 162, N70252, operated by Lanier Flight Center, was substantially damaged during a forced landing to a field near Franklin, North Carolina. The sport pilot received minor injuries. The personal flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed and no flight plan was filed for the flight that originated from Lee Gilmer Memorial Airport (GVL), Gainesville, Georgia, about 0900. The flight was destined to Macon County Airport (1A5), Franklin, North Carolina.

The sport pilot reported that near the destination airport, he reduced engine rpm from 2,350 to 2,200 and began a slow descent from cruise altitude of 3,500 ft mean sea level (msl) to traffic pattern altitude of 2,800 ft msl. The carburetor heat was not on at that time and about 2 minutes later, he became aware that the engine had lost all power without any roughness or sputtering. The sport pilot positioned the carburetor heat to on, mixture to full rich, and confirmed the fuel shut-off valve was not engaged; however, he was unable to restart the engine. During a forced landing to a field, the right wing struck a fence and the airplane came to rest inverted. The sport pilot further stated that after the accident, the operator inspected the airplane. Adequate fuel remained onboard and was absent of contamination. Additionally, no preimpact mechanical malfunctions were identified with the airframe or engine. The operator subsequently attempted a test-run of the engine on the airframe and the engine started and ran normally. The sport pilot added that he did not have a full understanding of the potentially subtle nature of carburetor ice.

Examination of the wreckage by a Federal Aviation Administration (FAA) inspector revealed damage to the right wing and fuselage. The inspector confirmed that at his request, the operator completed a successful test-run of the engine on the airframe.

The recorded weather at the destination airport, at 1020, included a temperature of 5° C and a dewpoint of 0° C. Review of an FAA carburetor icing chart for the given conditions revealed "Serious icing (cruise power)." Review of a pilot operating handbook for the make and model airplane revealed "...Descent...5. CARB HEAT Control Know – ON (as required)...."

Pilot Information

Certificate:	Sport Pilot	Age:	64,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Sport pilot	Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	June 13, 2018
Flight Time:	159 hours (Total, all aircraft), 159 hours (Total, this make and model), 159 hours (Pilot In Command, all aircraft), 22 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:	N70252
Model/Series:	E162 No Series	Aircraft Category:	Airplane
Year of Manufacture:	2011	Amateur Built:	
Airworthiness Certificate:	Special light-sport (Special)	Serial Number:	16200071
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	September 26, 2018 Condition	Certified Max Gross Wt.:	1320 lbs
Time Since Last Inspection:	32 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1360 Hrs at time of accident	Engine Manufacturer:	Continental
ELT:	C91A installed, not activated	Engine Model/Series:	O-200
Registered Owner:		Rated Power:	100 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	1A5,2034 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	10:20 Local	Direction from Accident Site:	345°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.12 inches Hg	Temperature/Dew Point:	5°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gainesville, GA (GVL)	Type of Flight Plan Filed:	None
Destination:	Franklin, NC (1A5)	Type of Clearance:	None
Departure Time:	09:00 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	35.101943,-83.385276(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.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):	Gretz, Robert
Additional Participating Persons:	Mark O'Connell; FAA/FSDO; Charlotte, NC
Original Publish Date:	April 13, 2020
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=98655

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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](#).