



# Aviation Investigation Final Report

<b>Location:</b>	Lancaster, Ohio	<b>Accident Number:</b>	CEN18LA370
<b>Date &amp; Time:</b>	August 31, 2018, 13:45 Local	<b>Registration:</b>	N71BN
<b>Aircraft:</b>	CUBCRAFTERS CC11-160	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fuel related	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot reported that while descending from cruise flight to traffic pattern altitude, the airplane's engine began to run rough. He applied carburetor heat which made the roughness worse and when he then turned off carburetor heat, the engine lost all power. The pilot executed a forced landing to a farm field where the airplane nosed over in the high vegetation.

According to a carburetor icing probability chart, the temperature and dew point were in the range of susceptibility for serious carburetor icing at descent power settings. The pilot's report of the accident listed no mechanical malfunctions or failures of the airplane, and a recommendation to apply carburetor heat earlier at the beginning of the descent.

Based on the information available the airplane's engine likely lost power due to accumulation of carburetor ice due to the delayed application of carburetor heat.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The delayed application of carburetor heat by the pilot which led to accumulation of carburetor ice, eventual loss of engine power, and the subsequent forced landing in high vegetation.

## Findings

<b>Personnel issues</b>	Delayed action - Pilot
<b>Environmental issues</b>	Conducive to carburetor icing - Effect on equipment

# Factual Information

## History of Flight

Enroute-descent	Fuel related (Defining event)
Emergency descent	Off-field or emergency landing
Landing	Nose over/nose down

On August 31, 2018, about 1345 eastern daylight time, a Cubcrafters CC11-160 airplane, N71BN, sustained substantial damage to the left-wing strut when it nosed-over during a forced landing to a soybean field following a complete loss of engine power. The airplane was descending to land at the Fairfield County Airport (LHQ), near Lancaster, Ohio. The pilot was not injured. The aircraft was registered to and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 as personal flight. Visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The flight originated from The Duchy Airport (5NC5), Chapel Hill, North Carolina, about 1045, and was destined for LHQ.

The pilot reported that while descending from cruise flight to traffic pattern altitude, the airplane's engine began to run rough. The pilot applied carburetor heat which made the roughness very bad and he turned the carburetor heat off. When he did this, the engine lost all power. The airplane's altitude was about 2,000 ft. msl (1,200 ft. agl), and the pilot performed an off-airport landing to a farm field. During the landing, the airplane nosed over in the waist-high vegetation. The pilot reported that there were no mechanical malfunctions or failures of the airplane, and noted earlier use of carburetor heat at the beginning of the descent as an operator recommendation.

The weather conditions at LHQ about the time of the accident included a recorded temperature of 28° C and a dew point of 21° C. According to a carburetor icing probability chart, this was in the range of susceptibility for serious icing during descent power settings.

## Pilot Information

<b>Certificate:</b>	Airline transport; Commercial	<b>Age:</b>	65,Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	July 24, 2018
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	20948 hours (Total, all aircraft), 38 hours (Total, this make and model), 15406 hours (Pilot In Command, all aircraft), 109 hours (Last 90 days, all aircraft), 42 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	CUBCRAFTERS	<b>Registration:</b>	N71BN
<b>Model/Series:</b>	CC11-160	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	2009	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Experimental light sport (Special)	<b>Serial Number:</b>	CC11-00107
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	September 20, 2017 Condition	<b>Certified Max Gross Wt.:</b>	1320 lbs
<b>Time Since Last Inspection:</b>	36 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	943 Hrs at time of accident	<b>Engine Manufacturer:</b>	Cub Crafters
<b>ELT:</b>		<b>Engine Model/Series:</b>	CC340
<b>Registered Owner:</b>		<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	LHQ, 868 ft msl	<b>Distance from Accident Site:</b>	3 Nautical Miles
<b>Observation Time:</b>	13:53 Local	<b>Direction from Accident Site:</b>	0°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.17 inches Hg	<b>Temperature/Dew Point:</b>	28°C / 21°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Chapel Hill, NC (5NC5)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Lancaster, OH (LHQ )	<b>Type of Clearance:</b>	VFR flight following
<b>Departure Time:</b>	10:45 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	Fairfield County LHQ	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	868 ft msl	<b>Runway Surface Condition:</b>	Vegetation
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	39.755554, -82.657218

## 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](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

<b>Investigator In Charge (IIC):</b>	Brannen, John
<b>Additional Participating Persons:</b>	Jon Jeffries; FAA - CMH FSDO; Columbus, OH
<b>Original Publish Date:</b>	November 6, 2019
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=98249">https://data.nts.gov/Docket?ProjectID=98249</a>

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](#).