Aviation Investigation Final Report

Location:	What Cheer, Iowa	**Accident Number:**	GAA16CA393
Date & Time:	July 25, 2016, 18:00 Local	**Registration:**	N9979G
Aircraft:	Cessna 188	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he was performing "practice" aerial application operations at 30 feet above the ground and the engine slowly lost power. He further reported that he made a left turn and landed in a bean field, which resulted in substantial damage to the right wing and left elevator.

During postaccident interviews with the pilot, he reported that immediately before the loss of engine power he was flying wings level, the mixture was forward (full rich), and the power was set to a cruise setting. He further reported that the carburetor heat was off for the entirety of the flight. The pilot reported that the loss of engine power was gradual and there was no visible oil spray over the windscreen. He reported that immediately after the accident he checked the oil level and found no anomalies.

During a postaccident examination, an airframe and powerplant mechanic reported that he drained 13 gallons of fuel from the single fuel tank. He further reported that he observed the float carburetor and gascolater, both were unremarkable. He also reported that the propeller could be rotated in a normal manner.

The Federal Aviation Administration Pilot's Handbook of Aeronautical Knowledge (PHAK) states in part: "Carburetor ice occurs due to the effect of fuel vaporization and the decrease in air pressure in the venturi, which causes a sharp temperature drop in the carburetor. If water vapor in the air condenses when the carburetor temperature is at or below freezing, ice may form on internal surfaces of the carburetor, including the throttle valve."

The PHAK further states: "If enough ice builds up, the engine may cease to operate. Carburetor ice is most likely to occur when temperatures are below 70 degrees Fahrenheit (°F) or 21 degrees Celsius (°C) and the relative humidity is above 80 percent. Due to the sudden cooling that takes place in the carburetor, icing can occur even in outside air temperatures as high as 100 °F (38 °C) and humidity as

low as 50 percent. This temperature drop can be as much as 60 to 70 absolute (versus relative) Fahrenheit degrees (70 x 100/180 = 38.89 Celsius degrees)."

An automated weather observing system about the time of the accident 13 nautical miles northeast of the accident site reported a temperature of 81 degrees Fahrenheit (27 Celsius) and a dew point 66 degrees Fahrenheit (19 Celsius). According to a carburetor-icing-probability chart, the engine was at risk of "moderate icing" at cruise power.

The airplane manufacturer owner's manual in part states: "In atmospheric conditions that are conducive to carburetor icing, select the minimum amount of carburetor heat for normal operation that will keep ice cleared from the carburetor."

It is likely that the loss of engine power was due to carburetor ice, however, the pilot, who was also the airplane owner, did not make the airframe or engine available for examination by the National Transportation Safety Board.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power for undetermined reasons due to the pilot not making the airplane or engine available for examination, which resulted in a forced landing and an impact with terrain.

Findings

Not determined	(general) - Unknown/Not determined
Environmental issues	Rough terrain - Contributed to outcome
Environmental issues	Conducive to carburetor icing - Not specified
Aircraft	Intake anti-ice, deice - Not used/operated

Factual Information

History of Flight

Maneuvering-low-alt flying	Loss of engine power (total) (Defining event)
Landing	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	50,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Single
Other Aircraft Rating(s):	Gyroplane	**Restraint Used:**	5-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	August 26, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	January 13, 2015
Flight Time:	(Estimated) 1313 hours (Total, all aircraft), 34 hours (Total, this make and model), 1252 hours (Pilot In Command, all aircraft), 58 hours (Last 90 days, all aircraft), 27 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N9979G
Model/Series:	188 A	**Aircraft Category:**	Airplane
Year of Manufacture:	1971	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	18800779
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	July 1, 2016 Annual	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	5344 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Not installed	**Engine Model/Series:**	O-470-U
Registered Owner:	On file	**Rated Power:**	250 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:	KOOA,840 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	23:35 Local	**Direction from Accident Site:**	30°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	20°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	27°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gibson, IA (NONE)	**Type of Flight Plan Filed:**	None
Destination:	Gibson, IA (NONE)	**Type of Clearance:**	None
Departure Time:	17:30 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	41.427776,-92.377777(est)

Administrative Information

Investigator In Charge (IIC):	Gerhardt, Adam
Additional Participating Persons:	Brian Lundquist; FAA; Des Moines, IA
Original Publish Date:	December 5, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=93693