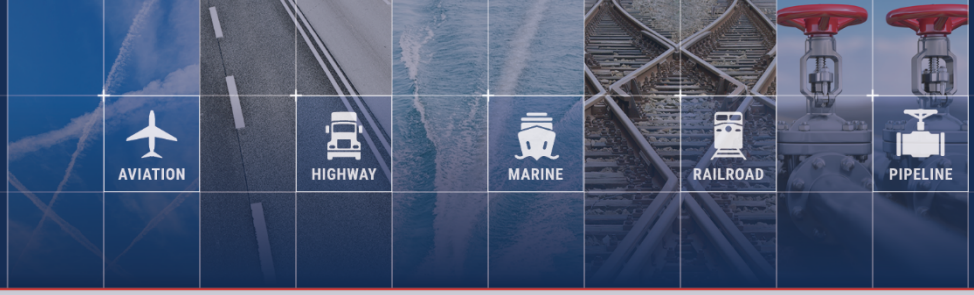

Aviation Investigation Final Report

Location:	Beechwood, Wisconsin	**Accident Number:**	CEN19LA071
Date & Time:	January 18, 2019, 15:30 Local	**Registration:**	N6497P
Aircraft:	Piper PA24	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

About 25 minutes into the cross-country flight, the pilot experienced a loss of engine power. After attempting different carburetor heat settings, switching fuel tanks, and adjusting the mixture settings, the engine continued to run, but was not producing enough power to maintain altitude. The pilot performed a forced landing to a field with the landing gear retracted, resulting in substantial damage to the fuselage.

Whether the atmospheric conditions were conducive to the development of carburetor ice could not be determined, as the dew point depression was not within the chart's matrix. Examination of the engine did not reveal any anomalies, but impact damage precluded thorough examination of the carburetor control rigging. Based on the available information, the reason for the loss of engine power could not be determined.

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 for reasons that could not be determined based on the available information.

Findings

Aircraft	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (partial) (Defining event)

On January 18, 2019, about 1530 central standard time, a Piper PA24, N6497P, sustained substantial damage when it was involved in an accident near Beechwood, Wisconsin. The private pilot sustained minor injuries. The airplane was operated as a Title 14 *Federal Code of Regulations Part 91* personal flight.

After 25 minutes of uneventful cross-country flight, the pilot noticed that the carburetor temperature gauge was in the "yellow" range. The gauge continued to move into the "red" range, which would indicate freezing. The engine began to lose power and the pilot pulled the carburetor heat knob to the full "ON' position, set the fuel mixture to full, and turned on the electric fuel pump. There was no change in engine power, so the pilot checked the magnetos and switched fuel tanks from left to right. After pushing the carburetor heat knob in, the engine seemed to run smoother, but there was no increase in power. He pulled the carburetor heat "ON' again, but the engine still ran poorly.

By this time, the airplane had descended to 2,000 ft. The pilot trimmed the airplane for 100 mph. The engine remained running, but there was still no increase in power. The pilot pulled the carburetor heat "ON' again, with no increase in engine power. The airplane was descending about 700 ft per minute and passing through 1,200 ft. The pilot made a distress call and announced that he was making an emergency landing. He configured the airplane for a gear-up landing in a field, during which the airplane sustained substantial damage to the fuselage.

According to the carburetor icing probability chart, given a temperature of -7°C and a dew point of -14°C, it could not be determined if the airplane's carburetor could have been susceptible to icing, because the dew point depression was not within the chart's matrix.

Damage to the carburetor assembly precluded determination of proper rigging; however, examination of the engine and fuel system revealed no anomalies. The carburetor heat control was found in the forward, "OFF" position.

Pilot Information

Certificate:	Private	**Age:**	64,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 25, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 11, 2018
Flight Time:	(Estimated) 198 hours (Total, all aircraft), 18 hours (Total, this make and model), 109 hours (Pilot In Command, all aircraft), 39 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N6497P
Model/Series:	PA24 250	**Aircraft Category:**	Airplane
Year of Manufacture:	1959	**Amateur Built:**	
Airworthiness Certificate:	None	**Serial Number:**	24-1617
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 1, 2018 Annual	**Certified Max Gross Wt.:**	2899 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6772 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-540 SERIES
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:	SBM,755 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	14:53 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 7500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	30°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.21 inches Hg	**Temperature/Dew Point:**	-7°C / -14°C
Precipitation and Obscuration:			
Departure Point:	Oconto, WI (OCQ)	**Type of Flight Plan Filed:**	None
Destination:	Burlington, WI (BUU)	**Type of Clearance:**	None
Departure Time:	11:30 Local	**Type of Airspace:**	Class E

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:**	45.606388,-88.109169(est)

Preventing Similar Accidents

Preventing Carburetor Icing (SA-029)

The Problem

According to NTSB aircraft accident data, from 2000 to 2011, carburetor icing was a cause or factor in about 250 accidents. On average, carburetor icing causes or contributes to two fatal accidents per year. Accident evidence shows that some pilots do not recognize weather conditions favorable to carburetor icing and inaccurately believe that carburetor icing is only a cold- or wet-weather problem. Pilots may also have not used the carburetor heat according to the aircraft's approved procedures to prevent carburetor ice formation. In addition, some pilots may not recognize and promptly act upon the signs of carburetor icing.

What can you do?

- Check the temperature and dew point for your flight 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.
- Refer to your approved aircraft flight manual or operating handbook to ensure that you are using carburetor heat according to the approved procedures and properly perform the following actions:
    - Check the functionality of the carburetor heat before your flight.
    - 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.
    - 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.
- Consider installing a carburetor temperature gauge, if available.
- Remember that aircraft engines that run on automotive gas may be more susceptible to carburetor icing than engines that run on Avgas.

See https://www.ntsb.gov/Advocacy/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):	Lemishko, Alexander
Additional Participating Persons:	Joseph Saunders; FAA FSDO; Milwaulkee, WI
Original Publish Date:	October 15, 2021
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98893