Aviation Investigation Final Report

Location:	Woodland, Washington	**Accident Number:**	WPR19LA132
Date & Time:	May 1, 2019, 10:30 Local	**Registration:**	N106AL
Aircraft:	OTTERBACK Lightning	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that after an uneventful flight in an experimental airplane he set up for landing. At about 1,200 feet he reduced the throttle to idle, turned on the carburetor heat, and entered the traffic pattern. After turning final, when the pilot began to reach for the throttle, the propeller stopped spinning. The engine had lost complete power, with no engine roughness or abnormal noises. Since the airplane was about 50 ft above the ground, the pilot continued to land onto the runway. The airplane bounced and when it touched back down, the airplane departed the left side of the runway. The pilot redirected the airplane back toward the runway surface, but the nose gear collapsed on the rough grass.

The nearest weather reporting station indicated temperature 13°C, dewpoint 4°C. Review of the Carburetor Icing Probability Chart revealed that, given the temperature and dewpoint, the conditions were on the line between serious icing at glide power and serious icing at cruise power. During a telephone conversation the pilot reported that the carburetor heat system takes hot air from near the muffler to keep the carburetor from icing up. It is likely that the carburetor accumulated ice while in cruise flight and the carburetor heat, when applied when the pilot reduced the throttle to idle, was not sufficient to remove the carburetor ice which resulted in a loss of engine power.

Probable Cause and Findings

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

A complete loss of engine power due to carburetor icing.

Findings

Environmental issues	Conducive to carburetor icing - Effect on operation
Aircraft	Intake anti-ice, deice - Capability exceeded

Factual Information

History of Flight

Landing	Other weather encounter
Landing	Loss of engine power (total) (Defining event)
Landing	Off-field or emergency landing

On May 1, 2019, about 1030 Pacific daylight time, an experimental, amateur-built Lightning airplane, N106AL, was substantially damaged when it was involved in an accident at the Woodland State Airport (W27), Woodland, Washington. The pilot and passenger were not injured. The airplane was operated under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight.

The pilot reported that after an uneventful flight he entered the traffic pattern at about 1,200 ft above ground level (agl), reduced power to idle and turned on the carburetor heat. After turning to final approach, the engine lost complete power, with no engine roughness or abnormal noises. Since the airplane was about 50 ft above the ground, the pilot continued to land onto the runway. The airplane bounced and when it touched back down, the airplane departed the left side of the runway. The pilot redirected the airplane back toward the runway surface, but the nose gear collapsed on the rough grass substantially damaging the lower fuselage and engine mounts.

The airplane is equipped with an experimental Jabiru 3300 engine. During a telephone conversation the pilot reported that the carburetor heat system takes hot air from near the muffler to keep the carburetor from icing. However, when the airplane is at idle for an extended period, the engine and exhaust cool, and the air being supplied to the carburetor is not as hot, making the carburetor susceptible to carburetor ice, particularly in severe icing conditions.

The 0953 automated weather observation at the Scappoose Industrial Airpark (SBP), Scappoose, Oregon, located about 9 miles southwest of the accident site, included calm wind, visibility 10 statute miles, clear skies, temperature 13°C, dewpoint 4°C, and an altimeter setting of 30.11 inches of mercury. Review of the Carburetor Icing Probability Chart in the Federal Aviation Administration Special Airworthiness Information Bulletin for Carburetor Ice Prevention revealed that, given temperature and dewpoint, the conditions were on the line between serious carburetor icing at glide power and serious carburetor icing at cruise power.

Pilot Information

Certificate:	Private	**Age:**	62,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:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 25, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 28, 2017
Flight Time:	830 hours (Total, all aircraft), 79 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	OTTERBACK	**Registration:**	N106AL
Model/Series:	Lightning	**Aircraft Category:**	Airplane
Year of Manufacture:	2011	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	111
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	November 12, 2018 Condition	**Certified Max Gross Wt.:**	1525 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	458 Hrs as of last inspection	**Engine Manufacturer:**	Jabiru
ELT:	Installed, not activated	**Engine Model/Series:**	3300
Registered Owner:		**Rated Power:**	120 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:	SPB,58 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	214°
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:	30.11 inches Hg	**Temperature/Dew Point:**	13°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Auburn, WA (S50)	**Type of Flight Plan Filed:**	None
Destination:	Woodland, WA (W27)	**Type of Clearance:**	None
Departure Time:	09:45 Local	**Type of Airspace:**	

Airport Information

Airport:	Woodland State Airport W27	**Runway Surface Type:**	Asphalt
Airport Elevation:	29 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	32	**IFR Approach:**	None
Runway Length/Width:	1953 ft / 25 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	45.892501,-122.735557(est)

Administrative Information

Investigator In Charge (IIC):	Link, Samantha		
Additional Participating Persons:	Charles Wright; Federal Aviation Administration; Hillsboro, OR		
Original Publish Date:	May 3, 2022	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99365		