Aviation Investigation Final Report

Location:	ANDOVER, New Jersey	**Accident Number:**	WPR18LA125
Date & Time:	April 23, 2018, 11:50 Local	**Registration:**	N8737V
Aircraft:	Bellanca 7GCBC	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, during the preflight inspection before the airplane's first flight of the day, which was also its first flight in 6 months during which it remained outside, he sumped about 32 ounces of fuel from each wing, the gascolator, and the lower sump. During taxi to the fuel pumps to refuel, he smelled smoke, which he thought might have been due to a bird's nest, so he and the airport manager removed the top and bottom cowls and thoroughly inspected the area around all the cylinders and the bottom cowl area and found no nests He subsequently fueled the airplane and conducted an engine run-up, and all indications were normal and remained normal throughout the takeoff roll. However, after taking off and as the airplane was about 500 ft above ground level (agl), the pilot noticed the rpm decreasing. He applied carburetor heat, but the engine rpm continued decreasing, so he decided to turn left toward the airport and subsequently landed uneventfully. He then completed a walk-around inspection with no anomalies noted.

The pilot then asked an airframe and powerplant mechanic to help him look for anything that might have caused the decrease of rpm. He and the mechanic inspected the engine and found no nest remnants in the induction airbox or associated ducting. The mechanic saw that the No. 3-cylinder exhaust manifold was hanging with no gasket, washers, or nuts present and that the intake cuff was found moderately deteriorated, incorrectly installed, and clamped to the airbox instead of the cowl. The mechanic examined the airbox and venturi, and found no obstructions, and he did not see anything that would have prevented fuel going to the carburetor. The mechanic noted that the main fuel supply line was fabricated out of unreinforced automotive fuel or coolant hose and that the line was pinched nearly closed due to a fitting misalignment. Subsequently, a standard aviation fuel hose and fitting were installed. The pilot then conducted a full-throttle engine run-up and a walk-around inspection with no anomalies noted. He checked the fuel level, and it showed over half a tank.

The pilot proceeded to taxi the airplane to the end of the taxiway and conducted a full-throttle run-up for about 45 seconds and a walk-around inspection with no anomalies noted. After a normal takeoff and just after clearing the end of the runway and the beginning of a lake and as the airplane was about 300 ft agl,

the pilot noticed the engine rpm decreasing "quickly." Unable to reach the airport, the pilot chose to ditch the airplane in the lake. The pilot reported that, just before water impact, the engine "stopped producing any usable power." The pilot egressed the airplane and was subsequently rescued by first responders. The airplane sank in 44 ft of water and was recovered about 24 hours later.

Although postaccident examination of the airframe and engine revealed no evidence of any preaccident mechanical malfunctions or failures that would have precluded normal operation, it is possible that some evidence that could have helped determine the reason for the two loss of engine power events might have been lost due to its submersion in water for 24 hours and/or during the recovery process. Therefore, based on the available evidence, the investigation could not determine what led to the partial loss of engine power during either of the two flight's takeoffs.

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 undetermined reasons.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Takeoff	Loss of engine power (partial) (Defining event)
Emergency descent	Loss of engine power (total)
Emergency descent	Collision with terr/obj (non-CFIT)

On April 23, 2018, about 1150 eastern daylight time, a Bellanca 7GCBC airplane, N8737V, was substantially damaged when it was involved in an accident near Andover, New Jersey. The pilot was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that, before departure and during the preflight inspection, he sumped about 32 ounces of fuel from each wing, the gascolator, and the lower sump. During taxi to the fuel pumps to refuel, he smelled smoke, which he thought might have been due to a bird's nest, so he and the airport manager removed the top and bottom cowls and thoroughly inspected the area around all the cylinders and the bottom cowl area and found no nests. He subsequently fueled the airplane with 13 gallons of fuel and conducted and engine run-up, and all indications were normal and remained normal throughout the takeoff roll. However, after taking off and as the airplane was about 500 ft above ground level (agl), the pilot noticed that the rpm was decreasing. He applied carburetor heat, but the rpm continued decreasing. When he repositioned the carburetor heat to cold, he saw that the rpm was still decreasing, so he decided to turn left toward the airport and subsequently landed uneventfully. He then completed a walk-around inspection with no anomalies noted.

An airframe and powerplant mechanic, reported that he saw the airplane take off and that the engine sounded normal when the airplane passed him at midfield. He added that, shortly thereafter, he heard the power "tapering off." He added that the engine sounded normal during the landing roll. The airport manager reported that, after the pilot refueled the airplane, he saw him remove the engine cowl to look for a bird's nest, and that he did not find any. Shortly after the airplane took off from runway 03, he saw the pilot turn the airplane toward runway 21 and then land uneventfully.

After the landing, the pilot asked the mechanic to help him look for anything that might have caused the loss of rpm. The mechanic reported that he found the intake cuff moderately deteriorated, installed incorrectly, and clamped to the airbox instead of the cowl. The mechanic provided the pilot with a new clamp but did not watch him install it. The mechanic noticed that the No. 3 exhaust manifold had “vibrated the nuts loose and it was hanging;” the remaining exhaust nuts were tight. Although he stated that they then replaced two gaskets, and the mechanic installed new nuts, washers, and lock washers, the mechanic reported that he just supplied the pilot with the parts and did not watch him install them. The mechanic examined the airbox and venturi, and found no obstructions, and he did not see anything that would have prevented fuel going to the carburetor. The mechanic observed a kink in the main fuel supply line, which he replaced. The mechanic reported the line was made out of an unreinforced automotive fuel or coolant hose. Subsequently, the pilot conducted a full-throttle engine run-up and a

walk-around inspection with no anomalies noted. He checked the fuel level, and it showed over half a tank.

The mechanic stated that, after the engine run-up, the pilot asked him if the items they found earlier could have contributed to other power loss-related events the engine had experienced in the past year and that he agreed that they could have been contributors. He added that, before further trouble shooting of the engine problem was performed, the pilot took off for the next flight.

The pilot reported that he taxied the airplane to the end of the taxiway and conducted another full-throttle engine run-up for about 45 seconds with no anomalies noted. After a normal takeoff and just after clearing the end of the runway and the beginning of a lake and when the airplane was about 300 ft agl, the pilot noticed the rpm decreasing "quickly." He immediately made a slight right turn toward a field as a possible emergency landing site, but due to the rapid decrease in rpm, he had to lower the airplane's nose to keep it flying, which eliminated the field as a landing choice because the airplane would not be able to clear a tree line in its path. Subsequently, the pilot turned left toward the departure airport, but about a third of the way through the turn, the engine "stopped producing any usable power." The pilot added that he "pulled the nose up as hard as…[he] possibly could right before impact" with the water. The pilot egressed the airplane and was subsequently rescued by first responders. The airplane sank in 44 ft of water and was recovered about 24 hours later.

The mechanic reported that, although he did not see the accident sequence, he did hear the same power reduction about the same time after takeoff as it had occurred after the first takeoff. The airport manager said he saw the airplane take off the second time and then veer slightly right, at which point, the engine seemed to "sputter and stall" when the airplane was about 200 ft. The airplane then "broke left and descended at a sharp angle," but the pilot leveled the airplane just before it impacted the lake.

Review of the airplane's maintenance records revealed that the engine's most recent field overhaul occurred on May 1, 2015, at a tachometer time of about 3,081 hours. The most recent annual inspection occurred on May 4, 2017, at a tachometer time of about 3,419 hours. The pilot did not provide engine or airframe times from the last annual inspection to the time of the accident.

Examination of the airframe and engine revealed no evidence of any preaccident mechanical malfunction or failures that would have precluded normal operation.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	49,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	December 16, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	December 17, 2017
Flight Time:	15000 hours (Total, all aircraft), 1000 hours (Total, this make and model), 3500 hours (Pilot In Command, all aircraft), 82 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bellanca	**Registration:**	N8737V
Model/Series:	7GCBC NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	1975	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	848-75
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	May 4, 2017 Annual	**Certified Max Gross Wt.:**	1650 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3419 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320
Registered Owner:	On file	**Rated Power:**	150 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:	12N,583 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	15:54 Local	**Direction from Accident Site:**	210°
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Unknown	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	350°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.45 inches Hg	**Temperature/Dew Point:**	18°C / -3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Andover, NJ (12N)	**Type of Flight Plan Filed:**	None
Destination:	Ellenville, NY (N89)	**Type of Clearance:**	None
Departure Time:	15:50 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Aeroflex-Andover Airport 12N	**Runway Surface Type:**	Asphalt
Airport Elevation:	583 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	03	**IFR Approach:**	None
Runway Length/Width:	1981 ft / 50 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	41.008609,-74.738052

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	Thomas W Savickas; Federal Aviation Administration; Saddle Brook, NJ David Harsanyi; Lycoming Engines; Williamsport, PA
Original Publish Date:	May 20, 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=97115