Aviation Investigation Final Report

Location:	St Louis, Missouri	**Accident Number:**	CEN20LA360
Date & Time:	August 22, 2020, 11:51 Local	**Registration:**	N7620A
Aircraft:	Cessna 180	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While in cruise flight, the pilot reported hearing a loud “pop,” and the engine suddenly lost power. The pilot executed a forced landing toward a lacrosse field surrounded by residences. The airplane impacted terrain in a nose-down attitude, which substantially damaged both wings and seriously injured the pilot.

A postaccident examination revealed that the carburetor mixture control cable was disconnected from the carburetor control lever at the carburetor, with the attachment hardware (bolt, nut, and washer stack) still attached to the carburetor. No other anomalies were found that would have precluded normal operation.

Laboratory analysis of the mixture control cable and attachment hardware (bolt, nut, and washer stack) determined that the hardware was used repeatedly in numerous configurations, and the cable did not have a kink at the end indicating it had not been bent. The maintenance manual specified that the cable was to be bent 90 degrees after being threaded through the bolt hole to help secure the cable, and not doing so likely contributed to the cable becoming disconnected from the carburetor control lever inflight.

Probable Cause and Findings

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

A total loss of engine power due to improper maintenance of the mixture control cable and attachment hardware, which led to a forced landing into a congested area.

Findings

Aircraft	Fuel control/carburetor - Incorrect service/maintenance
Personnel issues	(general) - Maintenance personnel
Environmental issues	(general) - Contributed to outcome

Factual Information

History of Flight

Enroute	Loss of engine power (total) (Defining event)
Landing	Hard landing

On August 22, 2020, about 1151 central daylight time, a Cessna 180 airplane, N7620A, was substantially damaged when it was involved in an accident near St. Louis, Missouri. 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 while en route about 5 minutes after takeoff, he heard a loud "pop" followed by a sudden loss of engine power. The pilot executed a forced landing toward a lacrosse field surrounded by residences. The airplane subsequently impacted terrain short of the field in a nose-low attitude, which resulted in damage to both wings and fuselage.

Postaccident examination of the flight controls, fuel system, and muffler revealed no anomalies. Fuel collected from the gascolator was observed to have normal color and smell, with no signs of visual contamination. The engine crankshaft was rotated, and all cylinders showed evidence of compression. No anomalies were noticed with the magnetos or spark plugs.

The carburetor mixture control cable was found disconnected from the control lever at the carburetor, with the attachment hardware (bolt, nut, and washer stack) still attached to the carburetor. The carburetor mixture control lever, which was not spring loaded toward a particular direction, was found at the cut-off position. The cockpit mixture control lever was about 2 inches from the full rich position.

The carburetor was examined at a repair facility. No anomalies were observed that would have led to a fuel stoppage of the engine.

A section of the carburetor mixture cable and attachment hardware were examined at the National Transportation Safety Board (NTSB) Materials Laboratory. The central wire of the mixture control cable had multiple flat areas around the outer diameter. The attachment hardware bolt had bands of wear on the outer diameter consistent with rub damage from the washers, and the washer faces had circumferential wear marks consistent with rub damage.

The engine maintenance manual specified that the carburetor mixture control wire was to be bent 90° after being threaded through the bolt hole to help secure the wire. No evidence of a kink or sharp bend was observed at the wire end.

Pilot Information

Certificate:	Private	**Age:**	63,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 8, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 18, 2020
Flight Time:	1200 hours (Total, all aircraft), 105 hours (Total, this make and model), 14 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N7620A
Model/Series:	180 UNDESIGNAT	**Aircraft Category:**	Airplane
Year of Manufacture:	1956	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32517
Landing Gear Type:	Tailwheel	**Seats:**	6
Date/Type of Last Inspection:	June 1, 2020 Annual	**Certified Max Gross Wt.:**	2550 lbs
Time Since Last Inspection:	10 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4446 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed	**Engine Model/Series:**	O-470-K
Registered Owner:	Casement Llc	**Rated Power:**	230 Horsepower
Operator:	Casement Llc	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSUS,462 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	11:54 Local	**Direction from Accident Site:**	291°
Lowest Cloud Condition:	Few / 6000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	29°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	St Louis, MO (1H0)	**Type of Flight Plan Filed:**	None
Destination:	Fredericktown, MO (H88)	**Type of Clearance:**	None
Departure Time:	11:45 Local	**Type of Airspace:**	Class E

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:**	38.623332,-90.542778

Administrative Information

Investigator In Charge (IIC):	Folkerts, Michael
Additional Participating Persons:	Klarann Voegele; Flight Standards District Office; St. Louis, MO Casey Love; Textron Aviation; Wichita, KS Kurt Gibson; Continental Motors; Mobile, AL
Original Publish Date:	June 3, 2022
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=101851