Aviation Investigation Final Report

Location:	Columbia, Illinois	**Accident Number:**	CEN18LA299
Date & Time:	July 28, 2018, 12:25 Local	**Registration:**	N624FL
Aircraft:	Piper PA28	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	3 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During the pilot's departure for the local flight, witnesses observed the airplane climbing at a shallower attitude than normal. The airplane appeared to level off and then contacted transmission lines about 1/2 mile from the departure end of the runway, which resulted in substantial damage to the airplane. A postaccident examination of the engine found fouled sparkplugs in cylinder No. 2 and a compression check of all the cylinders revealed that they were all below 60 psi. Cylinder No. 2 was at 18 psi, and the other three cylinders were about 50 psi. An engine manufacturer's service letter stated if the pressure reading is below 60 psi, removal and overhaul of the cylinders should be considered.

A weight and balance calculation revealed that the airplane was operating near its maximum gross weight.

The circumstances of the accident are consistent with the partial loss of engine power due to low compression in all of the cylinders and fouled sparkplugs in the No. 2 cylinder. The loading of the airplane near its maximum gross weight combined with a reduction in available engine power likely did not allow for the airplane to climb normally.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The airplane's inability to climb due to reduced engine power as a result of insufficient compression in all cylinders and fouled spark plugs in the No. 2 cylinder while operating near its maximum gross weight.

Findings

Aircraft	Recip eng cyl section - Fatigue/wear/corrosion
Aircraft	Recip eng cyl section - Not serviced/maintained
Aircraft	Maximum weight - Not specified
Environmental issues	Wire - Contributed to outcome

Factual Information

History of Flight

Takeoff	Loss of engine power (partial) (Defining event)
Initial climb	Collision with terr/obj (non-CFIT)

This report was modified on September 3, 2020. Please see the docket for this accident to view the original report.

On July 28, 2018, about 1225 central daylight time, a Piper PA-28-140 airplane, N624FL, was substantially damaged when it was involved in an accident near Columbia, Illinois. The pilot and two passengers were seriously injured, and one passenger sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 as a personal flight.

According to information obtained by the responding Federal Aviation Administration (FAA) inspector, the airplane departed runway 3 at Sackman Field (H49) and was en route to Alton, Illinois. Witnesses told the FAA they observed the airplane depart the airport and climb at a shallower than normal attitude. The airplane appeared to level off as it continued away from the airport until it contacted transmission lines about 1/2 mile from the departure end of the runway.

The FAA inspectors postaccident examination of the airframe did not find any anomalies which would have precluded normal operation. An examination of the engine conducted by the FAA inspector found fouled sparkplugs in cylinder No. 2 and a compression check of all the cylinders found low compression on each. (The No. 1 cylinder compression was 50 psi, the No. 2 cylinder compression was 19 psi, the No. 3 cylinder compression was 52 psi, and the No. 4 cylinder compression was 50 psi.) A borescope and visual inspection of the No. 2 cylinder did not detect the reason for its low compression.

Lycoming Service Instruction 1191A states that "if the pressure reading for all cylinders is equal and above 70 psi; the engine is satisfactory; less then 65 psi indicates wear has occurred and subsequent compression checks should be made at 100 hour intervals to determine rate and amount of wear. If the pressure reading is below 60 psi …, removal and overhaul of the cylinders should be considered." The instruction also states that low pressure in a single cylinder is indicative of air passing by the piston or valve.

In addition, the FAA inspector performed a weight and balance calculation with the occupants' weights obtained by first responders and verified by the pilot. The calculation revealed that the airplane was near the airplane's maximum gross weight.

Flight instructor Information

Certificate:	Private	**Age:**	36,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3	**Last FAA Medical Exam:**	
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	March 28, 2015
Flight Time:	243 hours (Total, all aircraft), 200 hours (Total, this make and model), 11 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N624FL
Model/Series:	PA28 140	**Aircraft Category:**	Airplane
Year of Manufacture:	1971	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-7125513
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 15, 2017 Annual	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:	66 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6719 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-320 SERIES
Registered Owner:		**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:	KCPS,413 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	12:53 Local	**Direction from Accident Site:**	27°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 11000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.13 inches Hg	**Temperature/Dew Point:**	26°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Columbia, IL (H49)	**Type of Flight Plan Filed:**	None
Destination:	Columbia, IL (H49)	**Type of Clearance:**	None
Departure Time:	12:25 Local	**Type of Airspace:**	

Airport Information

Airport:	Sackman Field H49	**Runway Surface Type:**	Grass/turf
Airport Elevation:	420 ft msl	**Runway Surface Condition:**	Vegetation
Runway Used:	03	**IFR Approach:**	None
Runway Length/Width:	2450 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Serious, 1 Minor	**Latitude, Longitude:**	38.461666,-90.229446(est)

Administrative Information

Investigator In Charge (IIC):	Aguilera, Jason
Additional Participating Persons:	William Grubb; FAA FSDO; St. Louis, MO
Original Publish Date:	September 14, 2020
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=97921