Aviation Investigation Final Report

Location:	Preston, Connecticut	**Accident Number:**	ERA23LA341
Date & Time:	August 19, 2023, 18:00 Local	**Registration:**	N7463W
Aircraft:	Piper PA28	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During a cross-country flight the pilot noticed the oil pressure decreased to zero. Seconds later, he noticed oil flowing up the windscreen and then the engine then lost total power. The pilot successfully landed the airplane in a field but, during the landing rollout, the right wing struck a metal pipe that was hidden in brush, separating it from the airplane.

Postaccident examination of the engine revealed a portion of the engine crankcase above the No. 2 cylinder was fractured and separated from the engine. The crankshaft end of the No. 2 connecting rod was separated from the crankshaft's No. 2 connecting rod journal.

A review of the aircraft maintenance logbook revealed that the most recent annual inspection was completed 3.5 operating hours before the accident. The maintenance log entry documenting the annual inspection noted in part that the oil filter was replaced, and that the old oil filter was cut open and inspected, with no contamination noted. The most recent engine overhaul was completed almost 25 years before the date of the accident (the engine manufacturer recommended that the engine be overhauled within 12 calendar years of having entered service).

Based on the available information, the loss of engine power was most likely the result of a deterioration of the engine's internal mechanical components that had been occurring over the time since the engine was last overhauled. This ultimately resulted in the failure of the No. 2 connecting rod, and the total loss of engine power.

Probable Cause and Findings

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

A failure of the No. 2 connecting rod, which resulted in a total loss of engine power.

Findings

Aircraft	Recip engine power section - Failure

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Landing-landing roll	Off-field or emergency landing
Landing-landing roll	Collision with terr/obj (non-CFIT)

On August 19, 2023, about 1800 eastern daylight time, a Piper PA28-180, N7463W, was substantially damaged when it was involved in accident near Preston, Connecticut. The pilot and passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, he departed Martha's Vineyard Airport (MVY), Vineyard Haven, Massachusetts, and was destined for Groton-New London Airport (GON), Groton, Connecticut. Once he reached a cruise altitude of 4,500 ft mean sea level, he noticed the oil pressure gauge indication drop to zero. Seconds later, he noticed oil pouring out of the engine cowling and flowing up the windscreen. The engine then lost total power. The pilot tried to glide the airplane to GON but was unable to reach the runway, so he set up for a landing in a field. The pilot successfully landed the airplane in the field but, during the landing rollout, the right wing struck a metal pipe that was hidden in brush. The airplane rotated 180° and the right wing separated from the fuselage, resulting in substantial damage.

An examination of the engine revealed that the left side of the engine case was ruptured and fragments of the engine case were sitting on top of the engine.

Further examination of the engine revealed the portion of the left crankcase half above the No. 2 cylinder was fractured and separated from the engine. The crankshaft end of the No. 2 connecting rod was separated from the crankshaft's No. 2 rod journal. The rod was deformed consistent with battering the rod journal and the interior of the right crankcase half. One portion of the rod, including a rod bolt hole, was bent inward. There was no rod bolt in the hole. A bent portion of a rod bolt with a nut still installed was recovered from the interior of the crankcase. A portion of the rod cap with the head portion of the rod bolt still in place was also recovered from the crankcase. The other portion of the connecting rod and the corresponding half of the rod cap and the rod bolt were separated from the rod and not recovered. Thin ferrous material, consistent with remnants of the No. 2 bearing was also recovered from the crankcase and the oil sump. The No. 2 cylinder was removed and the crankshaft rotated by turning the crankshaft propeller flange. Continuity of the crankshaft to the rear gears and to the valvetrain of cylinders Nos.1, 3, and 4 was confirmed. Compression and suction were observed from cylinders Nos. 1, 3, and 4.

A review of the airplane's maintenance logs revealed that the most recent engine overhaul was completed on October 1, 1998. According to a log entry dated June 20, 2007, the engine was disassembled and inspected due to "metal contamination." The maintenance log entry for this work noted, in part, the installation of "new main and rod bearings."

An entry dated June 1, 2022 documented an annual inspection and noted that the oil and oil filter were replaced, but did not document whether the old filter was cut open and inspected for contamination. The entry also indicated that cylinder compressions were: No. 1 80 psi, No. 2 42 psi, No. 3 75 psi, No. 4 42 psi. No corrective actions were noted in the entry.

An entry dated May 12, 2023, indicated that the tachometer (airframe/engine total time) was 3,500.5 hours, the engine time since major overhaul was 939.5 hours, and the time since the 2007 disassembly of the engine was 631.5 hours. The entry documented that the oil was changed, that the oil filter was replaced, and that the previous oil filter was cut open and examined with "no contaminants found." The entry noted that the cylinder compressions were: No. 1 74 psi, No. 2 22 psi, No. 3 70 psi, No.4 35 psi. It also stated, "Lap exhaust valves on cylinders #2 and #4. Recommend retest in 10 hours."

Lycoming Service Instruction No. 1191A stated: "If the pressure reading for all cylinders is equal and above 70 psi; the engine is satisfactory; less than 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 or if the wear rate increases rapidly, as indicated by appreciable decrease in cylinder pressure, removal and overhaul of the cylinders should be considered."

According to Lycoming Service Instruction No. 1009BE, "All engine models are to be overhauled within twelve (12) calendar years of the date they first entered service or of last overhaul. This calendar year time period TBO is to mitigate engine deterioration that occurs with age, including corrosion of metallic components and degradation of non-metallic components such as gaskets, seals, flexible hoses and fuel pump diaphragms."

Pilot Information

Certificate:	Private	**Age:**	21,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	July 14, 2023
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 24, 2022
Flight Time:	130 hours (Total, all aircraft), 33 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7463W
Model/Series:	PA28 180	**Aircraft Category:**	Airplane
Year of Manufacture:	1963	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-1353
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 12, 2023 Annual	**Certified Max Gross Wt.:**	2400 lbs
Time Since Last Inspection:	3.5 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3504 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-360-A3A
Registered Owner:	On file	**Rated Power:**	180
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:	GON,10 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	17:56 Local	**Direction from Accident Site:**	187°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 6000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	23°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Vineyard Haven, MA (MVY)	**Type of Flight Plan Filed:**	None
Destination:	Sussex, NJ (FWN)	**Type of Clearance:**	None
Departure Time:	17:05 Local	**Type of Airspace:**	Class E

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:**	41.523302,-72.016385(est)

Administrative Information

Investigator In Charge (IIC):	Boggs, Daniel
Additional Participating Persons:	Melanie Barillaro; FAA/FSDO; Enfield, CT Mike Childers; Lycoming ; Atlanta, GA
Original Publish Date:	July 24, 2024
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=192899