

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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WRECKAGE EXAMINATION SUMMARY

September 27, 2023,

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A. ACCIDENT

Location: Preston, CT
Date: 8/19/23
Time: 1800 EDT
2200 UTC
Airplane: Piper PA28

B. WRECKAGE EXAMINATION SUMMARY

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Party Member	Mike Childers Lycoming Engines

C. SUMMARY

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 drop to 0. Seconds later, he noticed oil pouring out of the engine cowl and flowing up the windscreen. The engine then lost total power. The pilot tried to glide the airplane to GON but was unable to make 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 some brush. The airplane rotated 180° and the right wing separated from the fuselage.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site

N/A, not observed.

2.0 Airframe Examination

Not examined,

3.0 Engine Examination

As first viewed, the aircraft fuselage was resting on blocks in a hangar at the facilities of Colonial Air Inc. in New Bedford, MA. The right portion of the lower engine cowl was impact damaged. The cowling was removed and the engine partially disassembled to facilitate the examination. The portion of the left crankcase half above the #2 cylinders was fractured and separated from the engine. The crankshaft end of the #2 connecting rod was separated from the crankshaft #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 but remained attached to the rod. 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 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 #2 bearing shells was also recovered from the crankcase and the oil sump. The #2 cylinders was removed and the crankshaft rotated by turning the crankshaft propeller flange. Continuity of the crankshaft to the rear gears and to the valve train of cylinders #1, #3 and #4 was confirmed. Compression and suction were observed from cylinders #1, #3 and #4.

A review of the aircraft maintenance logbook revealed that the most recent annual inspection was completed on 05/12/2023, 3.5 operating hours before the time of the accident, according to the tachometer hour meter reading at the time of the accident. The annual log entry states cylinder compression check readings at the annual inspection were cylinder #1 74psi, #2 22psi, #3 70psi and

#4 35psi. The entry further indicates that the exhaust valves of the #2 and #4 cylinders were "lapped" and a retest recommended after 10 hours.

Lycoming Service Instruction No. 1191A states: "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."

The most recent engine overhaul was completed on 10/01/1998, almost 25 years before the date of the accident.

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."

"CAUTION CALENDAR YEAR TBO IS BASED ON ACCELERATED TESTING AND OVERALL FLEET SERVICE DATA. LOCAL CLIMATE CONDITIONS, STORAGE CONDITIONS, FREQUENT EXTENDED PERIODS OF INACTIVITY, PRESERVATION TECHNIQUES USED DURING INACTIVE PERIODS, AND FREQUENCY OF OIL CHANGES CAN AFFECT CORROSION OF METALS AND DEGRADATION OF NON-METALS."

"For FAA Part 91 or EASA Part NCO (non-commercial) or equivalent operations, only an appropriately rated and qualified maintenance person (or international equivalent) can allow the twelve (12) calendar year TBO to be exceeded with concurrence from the controlling civil aviation authority to verify agreement with this provision and after thoroughly examining the engine for corrosion and degradation in accordance with 14 CFR 43 Appendix D (or international equivalent) and determining that the engine remains in an airworthy condition. This inspection is

to be repeated annually or as necessary to ensure continued airworthiness. The twelve (12) calendar year TBO must not be exceeded if the engine is affected by AD 2012-19-01 and not in compliance with AD 2012-19-01."

According to a log entry dated 06/20/2007, the engine was disassembled, inspected for metal contamination, repaired and reassembled.

IRAN 6/20/2007 – new main and rod bearings

05/01/2021 Compression #1-78, #2-68, #3-76, #4-63

06/01/2022 Compression #1-80, #2-42, #3-75, #4-42, no action

05/12/2023 Engine Annual Tach 3500.5, SMOH 939.5, IRAN 631.5, Compression #1-74, #2-22, #3-70, #4-35 Lapped #2 and #4 exhaust valve, recommend retest in 10 hours

The propeller remained attached to the engine crankshaft flange. The spinner remained attached and was undamaged. One propeller blade was bent aft about 10 degrees at about 10 inches from the tip. No damage to the other blade was noted.

The carburetor remained attached to the engine and no damage was noted. The throttle cable remained attached to the carburetor throttle arm and the arm was observed in a idle speed position. The cockpit throttle control knob was also observed in an idle position. The mixture control cable remained attached to the carburetor mixture control arm and the arm was observed in an idle cut off position. The cockpit mixture control knob was also observed in an idle cut off position. The carburetor heat cable remained attached to the induction air box valve control arm. The airbox was impact damaged and the valve observed in a mid-range position. The cockpit carburetor heat knob was observed about ½ inch from a "cold" position.

The carburetor was removed and partially disassembled. About 2 ounce of fuel was observed in the carburetor float bowl. No damage to other carburetor internal components was observed. The carburetor fuel inlet screen was unobstructed.

The engine driven fuel pump remained attached to the engine and no damage was noted. The pump produced air at the outlet port when

actuated by hand. It was partially disassembled and no damage to the rubber diaphragms or other components noted.

Both magnetos remained attached to the engine and no damage was noted. Power was applied to the left electronic magneto and it produced spark from all electrode towers when rotated using an electric drill. The right magneto also produced spark from all electrode towers when rotated using an electric drill.

The spark plug electrodes exhibited dark gray coloration and worn normal condition. The #2 and #4 bottom spark plugs electrodes were oily.

Oil was observed in the engine. When the oil sump was removed, about 1 to 2 quarts remained in the sump. A small amount of debris was observed in the oil suction screen but the screen was not obstructed. Metallic debris was also observed on the oil filter media.

Submitted by:

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Air Safety Investigator