National Transportation Safety Board
Office of Aviation Safety
Washington, DC 20594

ERA22FA261

WRECKAGE EXAMINATION SUMMARY

June 9, 2022

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A. ACCIDENT

Location:	Panama City, Florida
Date:	June 6, 2022
Time:	1610 CDT 2110 UTC
Airplane:	Piper PA-28RT-201

B. WRECKAGE EXAMINATION SUMMARY

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C. SUMMARY

On June 6, 2022, about 1610 central daylight time, a Piper PA-28RT-201, N160LL, was substantially damaged when it was involved in an accident near Panama City, Florida. The private pilot and passenger were fatally injured; another passenger sustained serious injuries. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

Figure 1 - ASD-B Track

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The airplane came to rest in a dense brush area, at an elevation of 25 ft, upright, on a 200° heading. All major components of the airplane were located in the vicinity of the main wreckage. The airplane struck three trees prior to impacting the ground. The first tree was about 100 ft from the main wreckage. There was an odor of fuel at the accident site.

Figure 2 - Main Accident Site

2.0 Airframe Examination

2.1 Fuselage

The forward section of the cabin was impact crushed aft. The four seats remained attached to the cabin floor. The top of the cabin was cut by first responders. The yokes remained attached to the control columns. Flight control continuity was established from the flight control surfaces to the flight controls through cuts made by recovery personnel.

The right underside of the fuselage was coated in oil.

Figure 3. View of fuselage.

2.2 Empennage

The empennage was partially impact separated but remained attached to the fuselage on the right side. The empennage was separated to facilitate recovery. The vertical stabilizer remained attached to the empennage. The rudder remained attached to the vertical stabilizer, but the bottom 8-inch section was impact separated. The horizontal stabilator remained attached to the vertical stabilizer. The stabilator trim tab remained attached to the horizontal stabilator. The trim drum was measured and corresponded to partial nose down trim.

Figure 4. View of right side of empennage.

2.3 Wings

The right wing remained attached to the fuselage and the leading edge exhibited impact damage. The outboard 4 ft section of the right wing was impact separated and located along the debris path. The inboard section of the right aileron remained attached to the right wing and was impact damaged. The right inboard section of the aileron remained attached to the right wing and the outboard section was impact separated and located along the debris path. The balance weight was not located. The right flap was extended to the 40° position and remained partially attached to the right wing. The right wing fuel cap remained seated and the right fuel tank was breached. The right fuel pickup screen was free of debris.

Figure 5. View of right wing.

The left wing remained attached to the fuselage. The leading edge exhibited impact damage the entire span. The left wing tip was impact separated and located in the vicinity of the left wing. The left flap was extended to the 40° position and remained attached to the left wing. The left aileron remained attached to the left wing and exhibited impact damage. The left fuel cap remained

seated and the left fuel tank was breached. The left fuel pickup screen was free of debris.

Figure 6. View of left wing.

2.4 Landing Gear

The airplane was equipped with tricycle, retractable landing gear. All three landing gear were in the extended position. The right main landing gear was impact separated and located along the debris path. The left main landing gear remained attached to the left wing. The nose wheel remained attached to the engine mounts.

2.5 Cockpit

Figure 7. View of instrument panel.

The flap handle was in the 40° flaps extended position. The landing gear handle was in the down position.

2.6 Survivability

The two front seats had a three-point harness with the lap belt and shoulder harness. The shoulder harness inertial reel operated when the shoulder harness was manipulated by hand. The aft two seats had lap belts only. The left aft seatbelt was cut by first responders. All seatbelts remained attached to their respective seats.

2.7 Fuel System

Prior to departing ECP, the airplane was fueled with 20 gallons of 100LL aviation fuel. The FBO put 10 gallons of fuel in each wing.

The fuel selector was in the left tank position. When low pressure air was applied to the fuel line going from the fuel selector back to left and right tank

inlet, air came out of the line going into each tank. There was no debris noted on the fuel screens inside the fuel tanks. The gascolator was disassembled and the fuel screen did not contain debris.

Figure 8. View of fuel selector as found.

The engine driven fuel pump was removed from the engine and could be operated by hand.

2.8 Other Systems

The airplane was equipped with Dynon HDX avionics and a Dynon D-10A that were removed and retained for data download.

Figure 9. View of units retained for data download.

The ELT was located secured to the airplane.

Figure 10. ELT found in airplane.

3.0 Engine Examination

Lycoming IO-360-C1C6
S/N: L-10924-51A
Rated power – 200 HP
Most recent inspection – Annual inspection – May 11, 2022

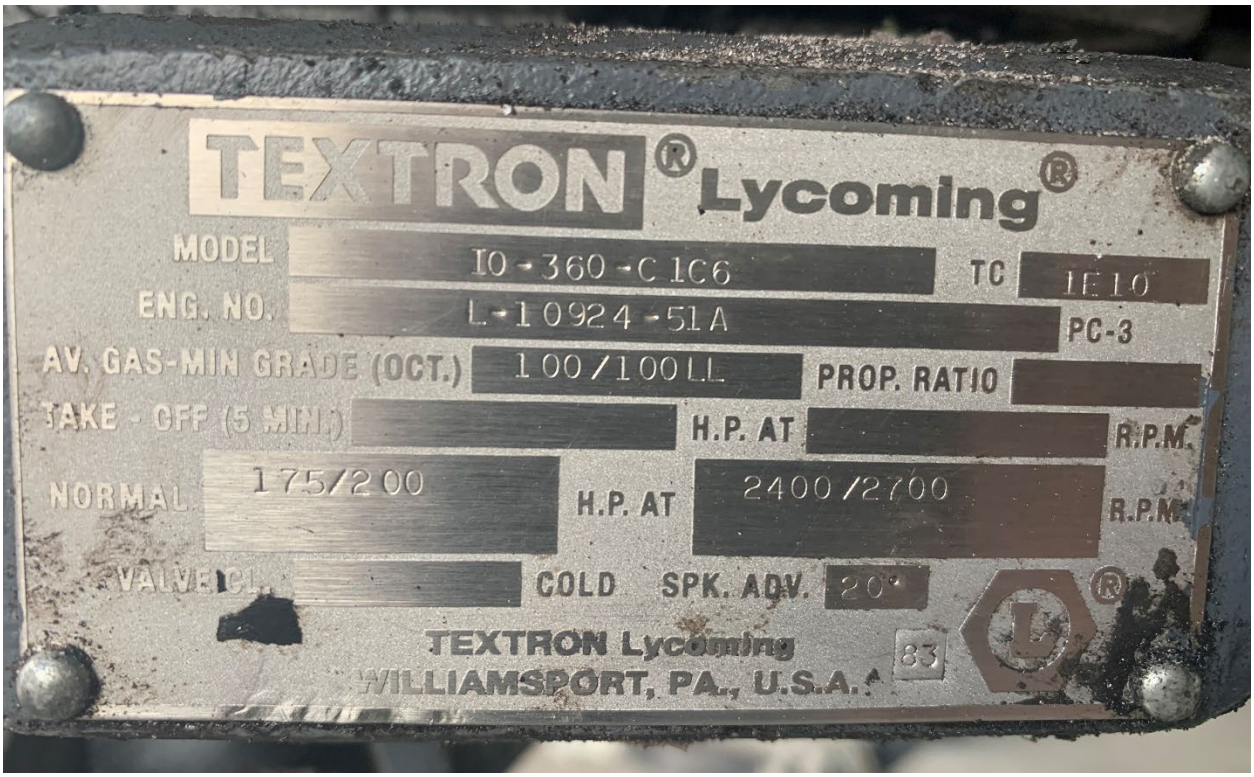

Figure 11. Engine Data Plate


Figure 12. Top view of engine.

The engine remained partially attached to the fuselage through the engine mounts, cables, and wires. It was separated from the firewall for examination.

The engine intake airbox was impact separated from the engine. The air filter was examined and no anomalies were noted.

There was a hole in the crankcase above the No. 4 cylinder.

Cylinders Nos. 1 & 2 were removed from the engine. No. 3 cylinder head was cut from the engine. No. 4 cylinder remained attached to the crankcase.

The camshaft was removed and examined. The No. 4 camshaft lob exhibited impact damage and thermal damage was noted on the aft section of the camshaft.

Figure 13. View of camshaft and main journal bearings. From left to right - front main bearing, center main bearing, rear main bearing.

The crankshaft was removed from the engine and examined. No anomalies were noted on the main journals. The Nos. 1 & 2 connecting rod journals exhibited no anomalies. The No. 3 connecting rod journal could not be examined because the No. 3 connecting rod remained attached to the crankshaft. The No. 4 connecting rod journal exhibited thermal damage and bearing material was noted welded to the crankshaft.

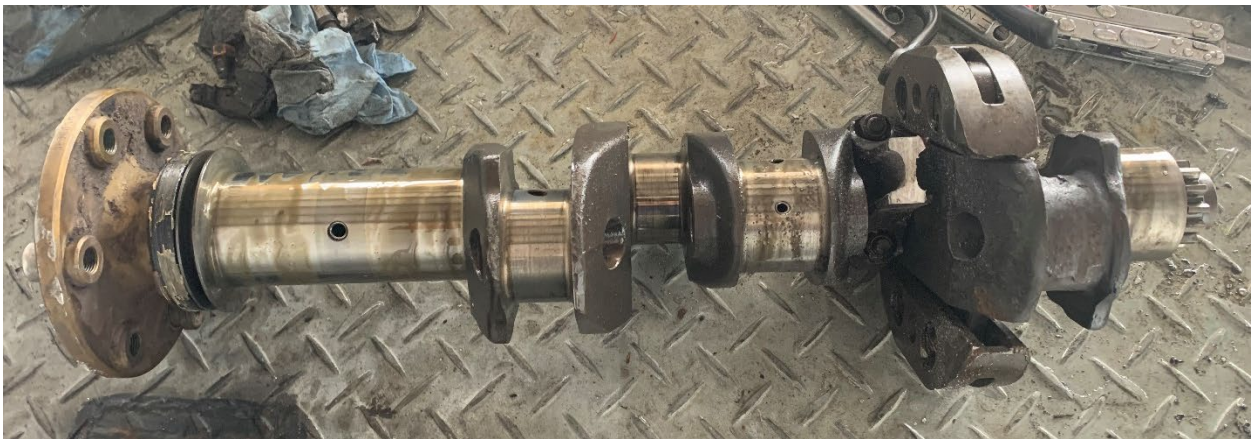

Figure 14. Crankshaft.

The front main bearing exhibited no anomalies. The center main bearing exhibited no anomalies. The rear main bearing exhibited minor smearing.

The No. 1 cylinder was examined and a small amount of rust was noted and the cylinder skirt exhibited impact damage. The No. 1 piston was examined and no anomalies were noted. The No. 1 connecting rod remained attached to the piston. The No. 1 connecting rod bearing was examined and no anomalies were noted.

The No. 2 piston exhibited a small amount of impact damage. The No. 2 cylinder was examined, and no anomalies were noted. The No. 2 piston face was examined, and normal deposits were noted. The No. 2 rod bearing was examined, and no anomalies were noted.

The No. 3 piston face was examined and exhibited normal deposits. The No. 3 piston remained inside the No. 3 cylinder. The cylinder head was removed to facilitate examination and no anomalies were noted.

The No. 4 cylinder remained attached to the crankcase. The No. 4 piston remained in the cylinder and could not be removed. The No. 4 connecting rod remained attached to the piston but was impact damaged and separated from the crankshaft. The No. 4 connecting rod bearing was smeared and located in the oil sump.

3.1 Induction and Exhaust System

The exhaust pipes were impact damaged and removed to facilitate examination.

3.2 Magnetos

The left and right magnetos remained attached to the engine. The magnetos were turned by hand and sparked on all towers.

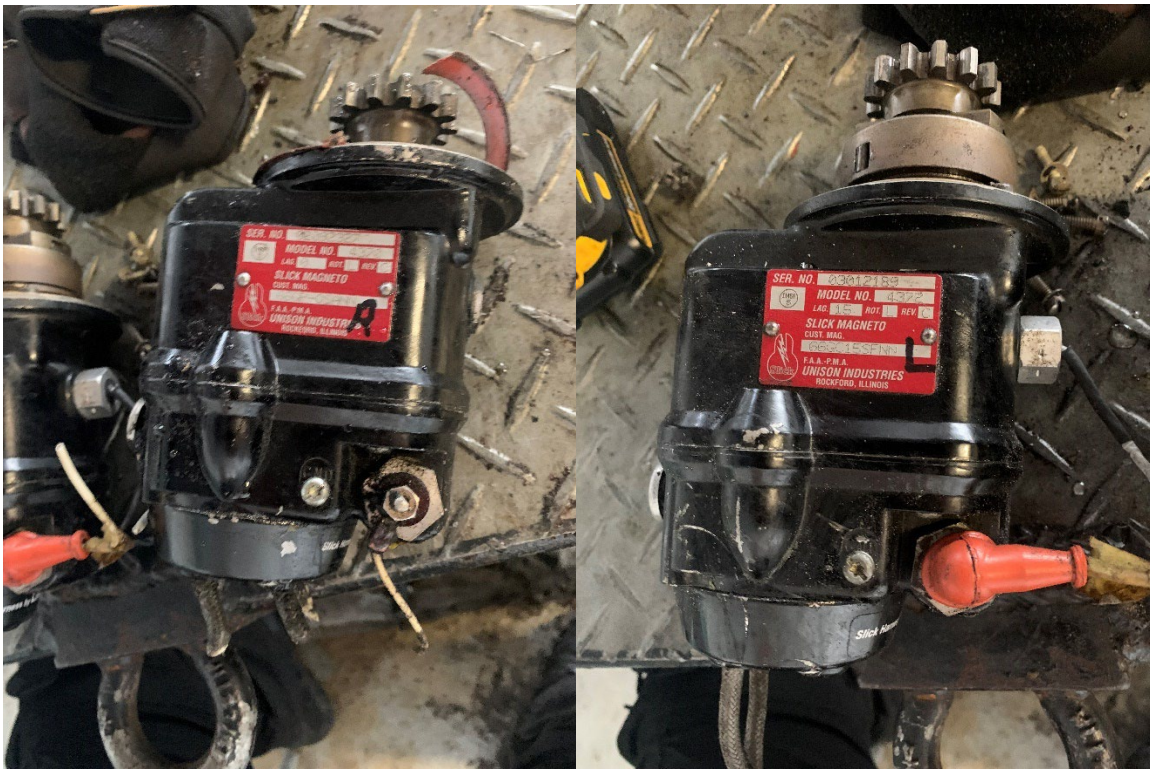

Figure 15. View of magnetos

3.3 Alternator

The alternator was impact separated from the engine and located in the vicinity of the main wreckage.

Figure 16. View of Alternator

3.4 Ignition System

The starter remained attached to the engine. Rotational scoring was noted on the starter gear.

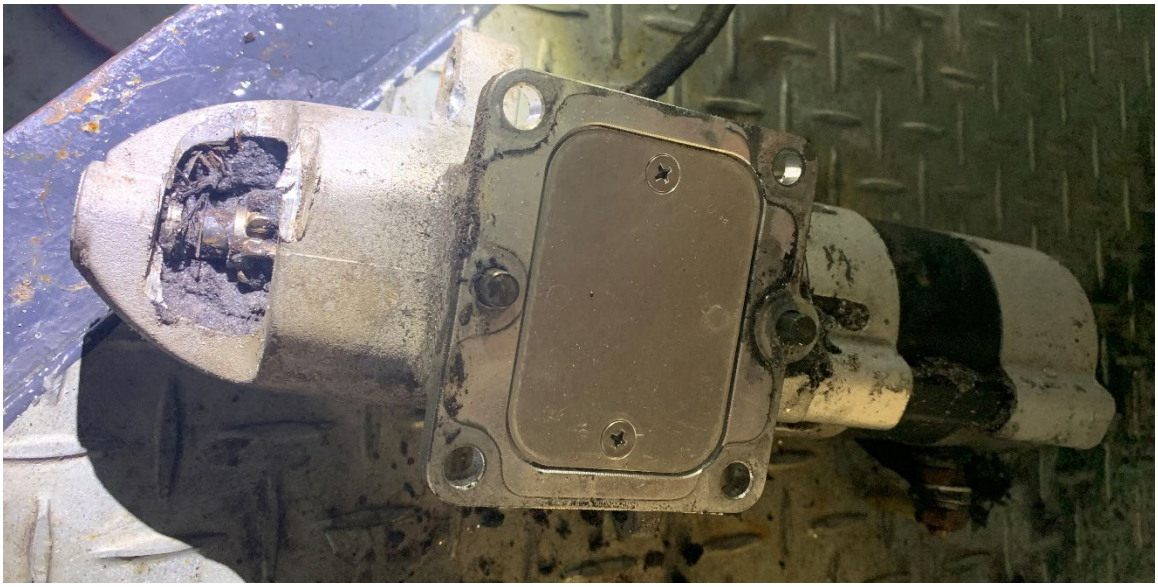

Figure 17. View of starter.

All spark plugs were removed from the cylinders and examined. The Nos. 1 and 3 top and No. 3 bottom spark plug was oil soaked. All other spark plugs were dark grey in color and exhibited normal wear when compared to the Champion Check-A-Plug Chart.

Figure 18. Bottom Spark Plugs

Figure 19. Top Spark Plugs

3.5 Fuel System

The fuel line from the airframe to the engine driven fuel pump contained fuel. The fuel line at the fuel manifold going to the No. 2 fuel injector had fuel in it. Nos. 1, 3, and 4 fuel lines going from the manifold to the fuel injectors did not contain fuel. Fuel was noted in the fuel manifold and the diaphragm was undamaged.

The engine driven fuel pump remained attached to the engine. It was removed and disassembled. The fuel outlet fitting was impact separated. The pump operated when it was actuated by hand. Fuel was noted inside the pump during disassembly. No damaged was noted to the internal diaphragms or check valves.

The electric fuel pump was removed from the firewall and when power was applied, it did not operate.

The fuel injector nozzles were removed from the cylinders and were not obstructed.

Figure 20. View of fuel injectors.

The fuel servo was impact separated from the engine. When it was examined, 100LL aviation fuel drained out of the inlet hose. Dirt was noted inside the throttle body. Both control cables were impact damaged, therefore, their position could not be determined. The control cables remained attached to their respective control arms. The fuel line to the servo was unobstructed. The throttle valve could be moved by hand. The fuel screen was removed from the throttle body and no debris was noted in the screen. The mixture control arm could be moved by hand. The servo regulator diaphragm was intact, and no anomalies were noted.

Figure 21. Fuel Servo

The fuel flow divider was removed from the engine. It was disassembled and no anomalies were noted with the diaphragm.

3.6 Lubrication System

The oil filler neck and dip stick were impact separated from the engine. The oil dip stick threads were undamaged but covered in oil and dirt. The threads of the filler neck were undamaged but were covered in oil and dirt.

Figure 22. View of oil filler neck and oil dipstick.

The oil cooler was removed and exhibited impact damage. The oil lines to and from the oil cooler were pressure tested and no leaks were noted.

Figure 23. View of oil cooler.

The oil suction screen was removed from the sump and it was filled about ¼ with metallic and carbon debris. About a ½ teaspoon of the debris was metallic.

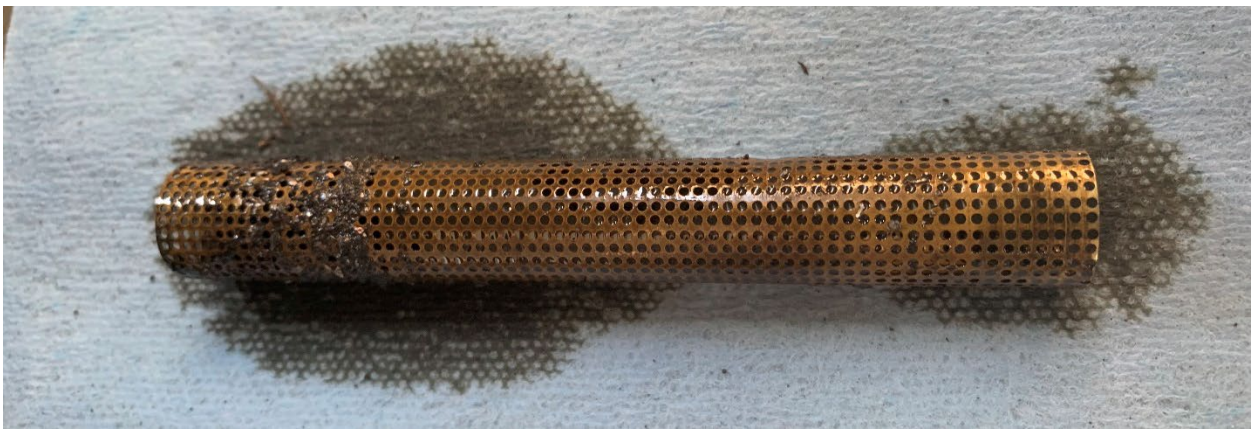

Figure 24. Side view of oil suction screen.

The oil pump was examined and could be rotated by hand. It was disassembled and no scoring was noted on the oil pump gears or the housing.

Figure 25. View of engine driven oil pump.

The oil filter adaptor was partially separated from the engine. The oil filter was removed from the engine and disassembled. The filter element was removed and no debris was noted in the filter. The oil filter date noted January 8, 2022, with a tachometer time of 494.4 hours.

Figure 26. View of oil filter housing and filter.

The oil sump was removed and the No. 4 connecting rod cap, connecting rod bolt and bearing pieces were noted in the sump along with other metallic debris.

Figure 27. View of oil sump and debris in the sump.

The oil drain plug remained seated and safety wired into the oil sump.

Figure 28. View of oil drain plug safety wired into the oil sump.

The oil pressure sensor was separated from the engine. The copper line was fractured at the fitting to the accessory section of the crankcase. The copper line and oil pressure sensor were retained for further examination. According to the STC and installation instructions, “Always mount the sensor to the airframe structure and connect it with flexible hose to minimize vibration effects.” Furthermore, the oil pressure sensor did utilize a restrictor fitting.

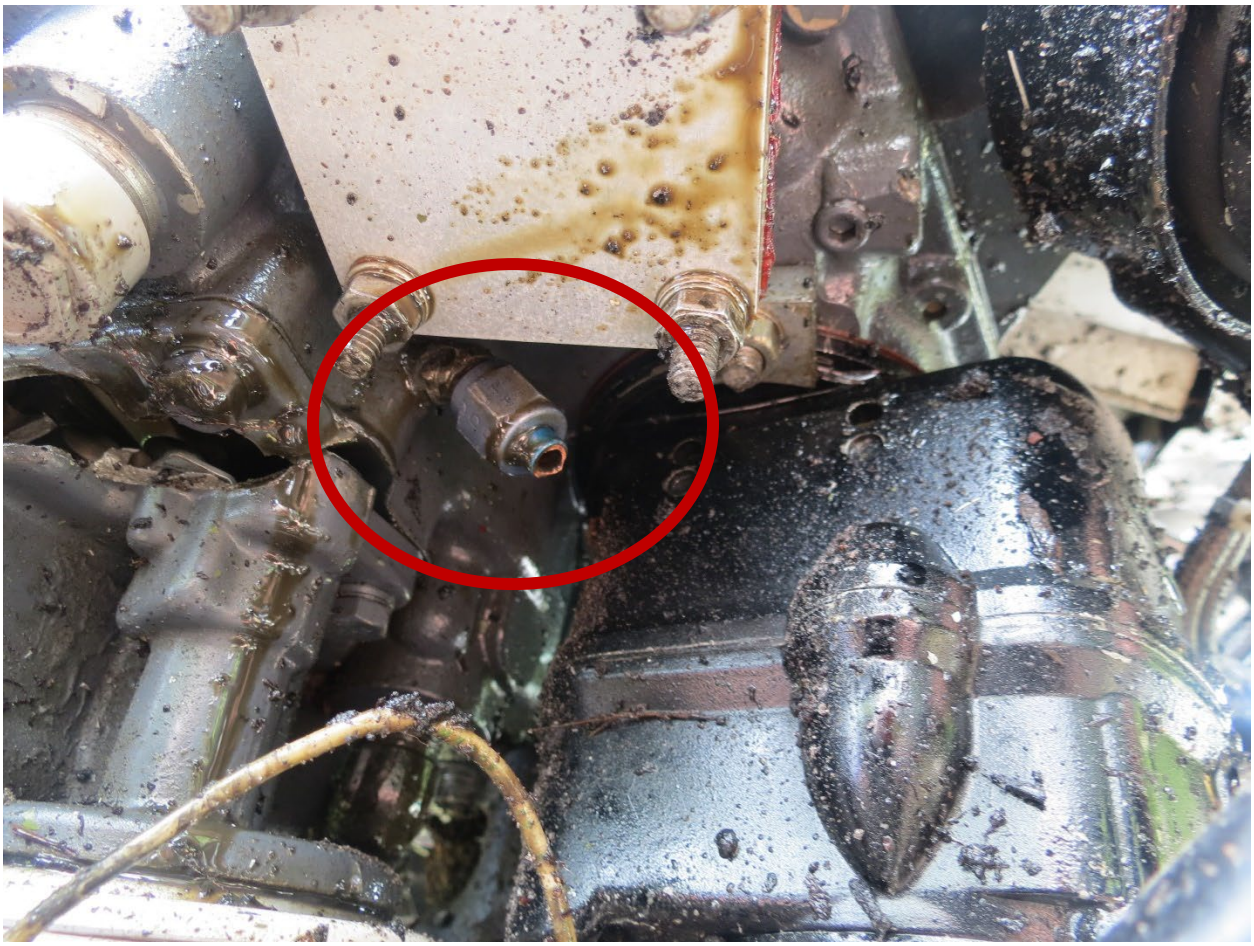

Figure 29. View of broken copper line installed on the accessory section of the engine.

The oil pressure sensor, copper line, and restrictor fitting were retained for further examination.

Figure 30. View of oil sensor line retained for further examination.

4.0 Propeller Examination

The three-blade propeller remained attached to the engine. The spinner was impact damaged and all blades remained attached to the hub. Blade A was bent forward about 30°. Blade B remained straight and exhibited chordwise scratching. Blade C was bent aft about 90°.

Figure 31. Propeller.

The propeller governor was removed and the control rod end remained attached to the control arm. The governor could not be rotated by hand. The

propeller governor screen was removed, and small particles were noted in the screen, but it was not obstructed. (Hartzell F-2-7A, S/N NK58665E)

Figure 32. View of propeller governor screen.

The oil line to the propeller governor was examined and no leaks were noted.

5.0 Other Site Details

There were multiple branches located along the debris path that exhibited black paint transfer and were cut at 45° angles.

Figure 33. View of branch with 45° angle cut and black paint transfer.

Submitted by:

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