

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA23LA040

EXAMINATION NOTES

8/27/2024

A. ACCIDENT

Location: Palm Beach County Airpark (LNA)
Date: October 23, 2022
Time: 1610 pm local EDT
2010 (UTC)
Airplane: Piper PA-32-RT-300T Serial # 32R-7887127; N39628

B. EXAMINATION NOTES

NTSB IIC Aaron McCarter
 NTSB
 Washington DC

FAA Juan Garcia (FAA ASI)
 FAA
 Miramar, Florida
 He did not participate in the follow up exam.

C. SUMMARY

On October 23, 2022, about 1610 eastern daylight time, a Piper PA-32RT-300T, N39628, was substantially damaged when it was involved in an accident near Lake Worth, Florida. The commercial pilot sustained minor injuries. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

According to the pilot, after an uneventful flight and landing at Palm Beach County Park Airport (LNA), West Palm Beach, Florida, the pilot purchased 10 gallons of aviation fuel for a total fuel load of 27 gallons for his next flight to Okeechobee County Airport (OBE), Okeechobee, Florida, about 55 nautical miles away. The pilot took off and climbed out normally. Shortly after retracting flaps and making a power adjustment, the engine started losing power. His attempt to regain power was unsuccessful; The pilot stated there was "no roughness" in the engine prior to or during the power loss. Unable to maintain level flight, and with an altitude of 300 ft above ground level, he was forced to land on a paved dead end road. During final approach, the airplane struck the top of trees. The airplane impacted the ground short of the road and skidded to a stop against a guardrail.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

Accident site was about 500 feet long. The wreckage path consisting of the ground scars and between four and eight propeller strike marks/gouges in the asphalt pavement leading up to the main wreckage. All components, flight control surfaces, wings, elevator & stabilizers were located in the immediate vicinity of the wreckage.



Figure 1: Accident site showing ground scars and wreckage.



Figure 2: Sequential propeller impact gouges in the asphalt.

2.0 Airframe Examination

2.1 Fuselage

Fuselage buckled and crumpled in several areas but mostly intact from behind the engine compartment and firewall. The most severe damage was to the wings and bottom of the fuselage.



Figure 3: Main wreckage.

2.2 Control Continuity

Flight control continuity was achieved on all flight controls through their respective flight control surfaces.

2.3 Wings

Right wing fuel tank ruptured, wing spar damaged, flap and aileron damaged. Right wing skin and internal rib structure sustain warping and wrinkling. Left wing torn at mid-section to wing spar from tree and wooden fence impact, rupturing left fuel tank. Left wing leading edge sustain impact damage, aileron warped and bent. Empennage lower section with wrinkling and warping, horizontal stabilizer leading edge sustain impact damage from tree.

2.4 Landing Gear

The landing gear was extended/down position but was impact separated from the airframe. It struck a fence before impacting the pavement.

2.5 Fuel/Fuel System

Leftover fuel samples from fuel tanks found no contamination. The pilot purchased 10 gallons of fuel from Stellar Aviation of South Palm Beach at the Lantana Airport. Fuel farm sample taken after accident found no fuel contamination and 42 aircraft were fueled from the fuel farm prior to this accident flight with no other issues reported. Fuel recovered from ruptured fuel tanks was about 1 1/2 gallons. Wing left and right fuel gauges indicate zero fuel, cockpit right fuel gauge indicate zero, left fuel gauge indicate about three gallons and electronic flight instrument indicator indicated 26 gallons.



Figure 4: Engine/performance monitor showing fuel.

The engine driven fuel pump was intact and operational. It was manually rotated with a drill and sucked/expelled fuel at low through high rpm settings.



Figure 5: Fuel pump prior to functional testing.

3.0 Engine Examination

The powerplant, a Lycoming TIO-540 SER (L-5551-61A) was a six-cylinder, air cooled, direct drive, horizontally opposed, fuel injected, turbo charged engine with a rating of 300HP @ 2700RPM. According to the MX records, the engine was overhauled on May 5 2022 at TTSN 3041.17 and the TSMOH was zero' d out.

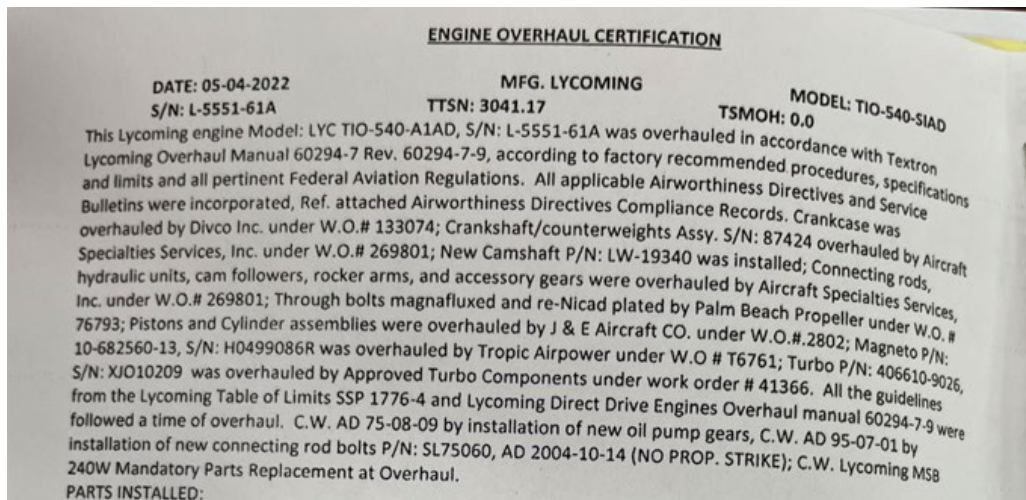


Figure 6: Excerpt from maintenance manual.

The engine was intact with no external impact damage to the power section. But there was engine mount damage and fractures. The propeller hub and prop assembly were canted slightly and all 3 blades exhibited rotational impact damage.



Figure 7: Engine right and left sides with valve covers removed.

Both left and right magnetos were removed and manually operated; both magnetos produced healthy blue/purple spark at all the posts and at every RPM setting.

All 12 the spark plugs displayed normal coloration and normal electrodes as compared to the Champion Aerospace AV-27 Check-A-Plug chart. Two lower spark plugs (Nos 1, 3) were had some corrosion around the threads that appeared to be from weather exposure (heat/humidity) The electrodes were intact.

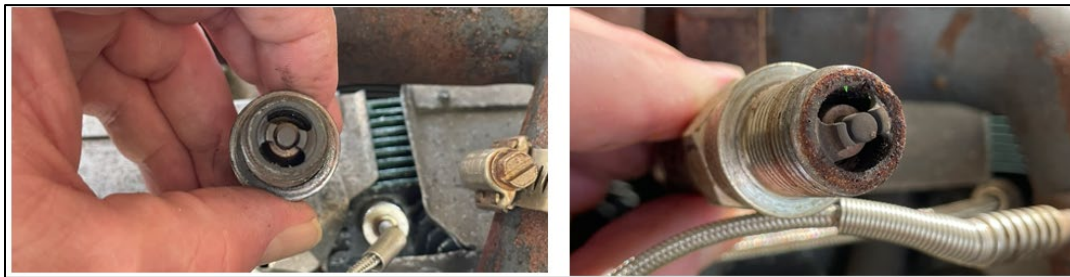


Figure 8: Spark plugs.

The oil filter was opened, and the pleats contained no trace amounts of ferrous material. The oil appeared mahogany brown in color and all lubricated components appeared to be well lubricated.



Figure 9: Opened oil filter and pleats.

The engine crankcase could not be manually rotated 360 degrees. It would bind after about 45 degrees of travel in both directions. Likely caused by impact and typical of a cam lobe interference caused by impact. There was binding internally that limited movement; noting that the pilot stated the propeller continued to rotate and there was rotational damage to the propeller and pavement during impact. A subsequent borescope of all six cylinders, pistons and valves revealed no anomalies noted on the piston faces, valve faces and interior of the cylinders. The fuel injectors were open and free of any obstructions. The fuel injectors were clear, and all six injectors appeared normal on the interior face of the injector. The engine oil suction screen was removed and examined. It was free of contaminants.



Figure 10: Borescope photographs examples of overall condition of all six piston/cylinder assemblies.

4.0 Propeller Examination

The propeller (Hartzell) hub remained attached to the flange and crankshaft and was slightly canted. The blades were designated as A, B and C for identification. The A blade had significant leading edge gouges on the outer 12 inches and was curled aft. The B blade had camber scrapes and gouges on the leading edge and was curled aft tightly indicating this was likely the first blade to make contact with the pavement. The C blade had scrapes and gouges of less severity and had a slight curve aft. The spinner was crushed inwards on one side and showed some rotational damage. The propeller governor and control linkage were functional and remained connected.



Figure 11: Propeller damage.

5.0 Turbo

The turbo charger compressor section was frozen in place and could not be rotated. Visually there was no damage to the compressor blades. They were clean and exhibited no damage prior to closer examination. A member of the salvage/recovery team inadvertently twisted off the wheel nut/shaft while trying to disassemble the unit during the examination causing damage to the nut and a few blades. Once the entire unit was removed, an attempt was made to rotate the unit but was unsuccessful. The unit had superficial damage to the shroud but was otherwise intact and no cause could be determined why the unit would not rotate. The unit was sent to the manufacturer (Hartzell) for an observed examination, teardown and functionality testing.

Subsequent testing at Hartzell revealed corrosion/rust between the shaft and housing which prevented rotation. Note, the airplane had been sitting outside in the elements (Florida) for a year. Using an arbor press, the shaft dropped out fine. The bearings and journals looked normal. Nothing was seen that would prevent normal

operation. There was rotational scoring on the intake housing. The unit was well lubricated and exhibited signs that during the accident, it was rotating.



Figure 12: Turbo examination photographs. Note rotational scoring in top left.

6.0 Meteorological Information

Location.....: KLNA

Day of month.....: 23

Time.....: 20:15 UTC

Report is fully automated, with no human intervention or oversight.

Wind.....: true direction = 010 degrees; speed = 13 knots

Visibility.....: 10 Statute Miles

no clouds and no restrictions on vertical visibility

Temperature.....: 29 degrees Celsius

Dewpoint.....: 19 degrees Celsius

QNH.....: 30.03 inHg

Remarks

site is automated and has a precipitation sensor.

Temperature.....: 28.5 degrees Celsius

Dew Point.....: 18.9 degrees Celsius

Submitted by:

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Aviation Accident Investigator IIC