

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR25LA131

AIRFRAME AND ENGINE EXAMINATION

May 13, 2025

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A. ACCIDENT

Location: Green Valley, Arizona
Date: April 13, 2025
Time: 1342 mountain standard time
Airplane: Piper PA-32-260, N3797W

B. AIRFRAME AND ENGINE EXAMINATION

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C. SUMMARY

On April 13, 2025, about 1342 mountain standard time, a Piper PA-32-260, N3797W, was substantially damaged when it was involved in an accident near Green Valley, Arizona. The pilot and passenger were not injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

The pilot reported that, while climbing through 6,300 ft mean sea level (msl), about 20 miles north of Nogales, Arizona, the engine began to sputter. While troubleshooting, he turned on the electric fuel pump and switched fuel tanks. The engine sputtering progressively got worse, and the engine power degraded. Unable to maintain altitude, he elected to make an off-airport landing on a dirt road. During the landing roll, the airplane encountered a wind gust and became airborne. The airplane's left wing and main landing gear impacted a dirt berm, and the airplane came to rest upright.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

Examination of the recovered airframe revealed that the recovery organization had removed the left and right wings from the fuselage at the wing root. The stabilator

had been removed for transport. The lower forward section of the fuselage, beneath the cockpit was impact damaged. The observed hobbs meter time was 708.0 hours and the observed tach time was 3298.8 hours.

Flight control continuity was established from the cockpit flight controls to the respective flight control surfaces. All areas of separation within the flight control cables were consistent with overload or separation by recovery personnel to facilitate recovery.

The left wings exhibited impact damage, crushing and bending were observed on the inboard leading edge. The airplane was equipped with two integral wing fuel tanks and two wing tip tanks. The visual inspection of the right and left fuel caps revealed that the rubber seals appeared worn. All four fuel filler ports were normal and unremarkable. No fuel was observed in any of the wing fuel tanks. The aircraft's battery was electrically connected to the fuel boost pump and it was heard to operate. Air was applied to both wing fuel outlet lines (main and tip tanks) and could be heard at both filler necks.

A visual inspection was conducted of the fuel system. The fuel selector lever was observed in the right wing tip fuel tank position. The fuel lines within the cabin, coming from the left and right wing, were tested with low air pressure and continuity was confirmed through the fuel selector valve and through the electric boost pump. The fuel selector valve appeared undamaged and rotated normally, and each detent was noticeable. The fuel supply line from the fuel selector to the fire wall was fracture separated, consistent with wing removal during recovery. About 3 ounces of blue liquid, consistent with 100LL avgas in both odor and color, was drained from the carburetor bowl.

Both the left and right wings' fuel inlets were capped, and all four fuel tanks were filled with water. Leaking from the fuel sump of the left wing tip tank was observed. The damage to the fuel sump was consistent with impact damage. No other leaking from the wings was observed.

The throttle and mixture control cable continuity was established from the cockpit controls to the carburetor and all levers moved from stop to stop when actuated by hand. The propeller control cable continuity was established from the cockpit control lever to the propeller governor and moved from stop to stop when actuated by hand.

2.0 Engine Examination

Engine Manufacturer: Lycoming
Engine Model Number: O 540-E4B5
Engine Serial Number: L-10653-40

Examination of the recovered engine revealed that it remained attached to the engine mounts. All six cylinders and all engine accessories remained attached. All fuel and oil lines appeared attached to their respective fittings and were tight. No evidence of any mechanical damage was observed to the engine crankcase.

The rocker box covers were removed. The intake and exhaust rocker arms were intact, and oil coated on all cylinders. All intake and exhaust valve springs were in place and visually appeared to be undamaged. The upper spark plugs were removed, and all six cylinders were examined internally using a lighted borescope. A normal amount of combustion deposits was observed within the combustion dome of each cylinder and piston face. All of the intake and exhaust valves were unremarkable. The crankshaft was rotated by hand using the propeller hub. Rotational continuity was established throughout the engine and valve train. Thumb compression and suction was obtained on all six cylinders.

The top engine spark plugs were removed from the engine, and they were the massive electrode type. All the spark plug exhibited light gray deposits within the electrode area. The spark plugs exhibited signatures consistent with WORN OUT - NORMAL when compared to the Champion Check-A-Plug chart.

The left and right magnetos remained attached to the engine accessory case with no external damage noted. When the engine crankshaft was rotated by hand using the propeller, spark was produced on all six ignition leads and the impulse coupling engagement was heard.

A visual inspection was conducted of the induction system. The induction system remained attached to the carburetor. The air induction filter element and housing were impact damaged and contained dirt consistent with impacting terrain.

The exhaust system remained secure to the cylinders. No evidence of any exhaust leaks around the cylinder attach points were observed. The exhaust system was examined internally using a lighted borescope, no debris or obstruction was observed. Crushing was observed near the exhaust outlet port.

The airplane was strapped down to stationary I-bolts. An external fuel tank was attached to the airframe inlet port. The first attempt to start the engine, the engine rotated but would not start. Additional fuel priming was conducted and the engine started during the second attempt to start. Due to vibrations from the damaged propeller, the engine was only operated for about 3 minutes at a maximum engine rpm of about 1,000 rpm. The damaged propeller was removed and a substitute constant speed propeller was attached. The engine ran through various power settings uneventfully for about 5 minutes. A functional check of the magnetos was conducted, and a change of about 50 rpm was noted during the left and right

magneto checks. The throttle was advanced to the full forward position and a static rpm of about 2,700 rpm, was observed.

The JPI EDM-700 SR# 37441 was retained for further examination.

3.0 Propeller Examination

Propeller Manufacturer: Hartzell
Propeller Model: HC-C3YR-1BF
Propeller Serial Number: DY6172B

The airplane was equipped with a three blade Hertzell propeller; for the purposes of this report the propeller blades were labeled A, B, and C. All blades remained attached to the propeller hub. All the propeller blades exhibited aft bending about mid span, consistent with impact damage.

4.0 Aircraft Information

A review of the airplane logbooks revealed that, the most recent annual inspection was conducted on 3/26/2025. The observed hobbs meter time was 708.0 hours and the observed tach time was 3,298.8 hours. According to the engine logbook, the engine was disassembled, cleaned, inspected and overhauled on October 14, 2014. At the time of the overhaul, the engine total time was 1,454.4 hours.



Figure 1: View of airframe logbook cover page.

Reg. No. - N3797W Piper PA-32-260 S/N 32-725		Date 3/26/25					
This Aircraft has been inspected in accordance with an Annual Inspection and determined to be in airworthy condition at this time. Complied with Inspection checklist as per Appendix D to Part 43. C/ W ELT Annual inspection I.A.W. FAR 91.207 (d). For AD compliance see AD listing. ELT battery expires: March 2029 AD 69-22-02 (7/30/79) Control wheels inspected as per Paragraphs (a)(b)(1) as applicable. No defects. Due each Annual. AD 75-24-02 (11/21/75) Quick-disconnect seat mech. Inspected as per Paragraph 1, no defects noted. Due each Annual. AD 76-07-12 (8/30/77) Ignition switch checked as per Paragraphs (1) (a-d) as applicable, no defects found. Due each 100 Hrs TIS AD 78-23-01(11/03/78) Fuel drain door inspected as per Paragraphs (b)(1-3) as applicable. Due each 100 Hrs TIS AD 13-02-13 (3/11/13) Horizontal Stabilator control cables inspected as per Paragraph (g)(1) and MSB 1245A Instructions 1-10. No defects found. Due Each 2,000 Hrs TIS or 7 Yrs which ever comes first. AD 17-14-04 (8/15/17) Oil cooler hoses inspected as per Paragraph (g)(Note 1) flexible and no leakage. AD 20-24-05 (12/28/20) Main wing spar roots for corrosion Inspected as per Paragraphs (g)(1)(i & iv) no corrosion noted. Due inspection again March 2032. Checked battery, brake reservoir for proper service, all flight control cables and flight control travels checked as per Piper Maintenance Manual, replaced air filter element with BA-3. Flight Sport Aviation, LLC A&P, IA		<table border="1"> <tr> <td>Tach</td> <td>702.8</td> </tr> <tr> <td>TTAF</td> <td>6268.1</td> </tr> </table>		Tach	702.8	TTAF	6268.1
Tach	702.8						
TTAF	6268.1						
		Authorized Signature [Redacted]					

Figure 2: View of airframe annual inspection.

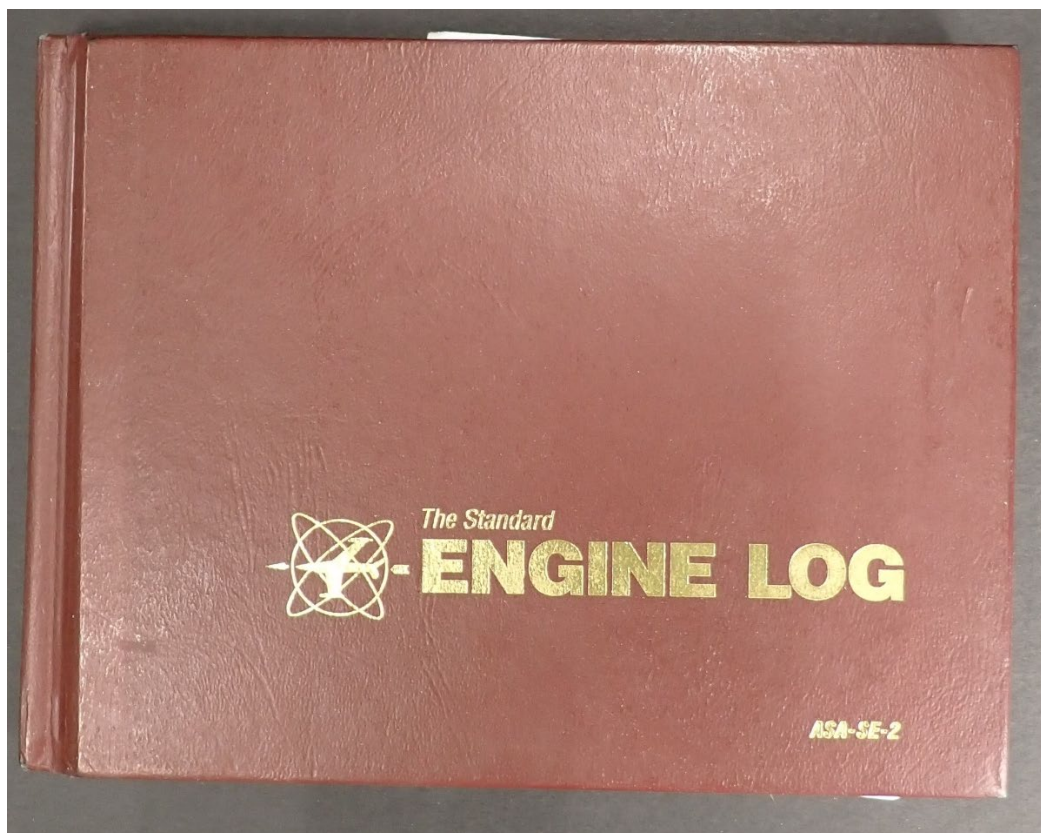


Figure 3: View of engine logbook cover page.

YEAR 20 DATE	RECORDING TACH TIME	TODAY'S FLIGHT	TOTAL TIME IN SERVICE	Description of Inspections, Tests, Repairs and Alterations Entries must be endorsed with Name, Rating and Certificate Number of Technician or Repair Facility. (See back pages for other specific entries.)
				MAKE: LYCOMING MODEL: 0-540-E4B5 SERIAL # L-10653-40 N # N3797W T.T. 1754.4 THE ABOVE ENGINE WAS DISASSEMBLED, CLEANED, INSPECTED, REPAIRED AS NECESSARY, CRANKCASE (LOW END) WAS OVERHAULED, #1 CYLINDER NEW, #2 THRU #6 CYLINDER REPAIRED AS NECESSARY, RECONDITIONED CAMSHAFT AND BODIES, ASSEMBLE ENGINE PER LYCOMING OVERHAUL MANUAL 60294-7-14 AND PARTS MANUAL PC115-2. MAGNETOS RECEIVED A 500 HR. INSPECTION, PERTINENT DETAILS ARE ON FILE AT THIS FACILITY UNDER INV. 9394. A.D. RESEARCH COMPLETED. ENGINE WAS TEST RAN IN ENGINE TEST CELL. END.----- DATE: OCT. 14, 2015 TIM'S AIRCRAFT ENGINES INC. SIGNED [REDACTED] FAA REGISTRATION 122R537Y

2. This unit contains an engine assembly. Discard the engine assembly.

Figure 4: View of engine overhaul logbook entry.

YEAR 20 DATE	TIME	TODAY'S FLIGHT	TOTAL TIME IN SERVICE	Description of Inspections, Tests, Repairs and Alterations Entries must be endorsed with Name, Rating and Certificate Number of Technician or Repair Facility. (See back pages for other specific entries.)	YEAR 20 DATE						
Reg. No. - N3797W Lycoming O-540-E4B5 S/N L-10653-40				Date- 3/26/25							
This Engine has been inspected in accordance with a 100 Hour/Annual Inspection and determined to be in airworthy condition at this time. Complied with Inspection checklist as per Appendix D to Part 43. For AD compliance see AD listing. Compressions #1 79/80, #2 78/80, #3 78/80, #4 79/80, #5 78/80, #6 79/80 AD 24-21-02 (12/5/24) Connecting rod and bushings, Inspected as per Paragraphs(g)(1), no defects noted. Next Due @ 752.8 Tach Time. Draine oil, replaced filter with AA48110-2, added 10 Qts Phillips 20W50 XC oil, cleaned and gapped plugs, run and leak check good.				<table border="1"> <tr> <td>Tach</td> <td>702.8</td> </tr> <tr> <td>TSMOH</td> <td>2676.8</td> </tr> <tr> <td>TSBottom</td> <td>922.4</td> </tr> </table>		Tach	702.8	TSMOH	2676.8	TSBottom	922.4
Tach	702.8										
TSMOH	2676.8										
TSBottom	922.4										
Flight Sport Aviation, LLC A&P, IA				Authorized Signature							

Figure 5: View of engine annual inspection.

HARTZELL	
PROPELLER LOGBOOK	
PROPELLER MODEL	HC-C34R-1RF
PROPELLER S/N	DY6172B
LOGBOOK #	/

Figure 6: View of propeller logbook cover page.

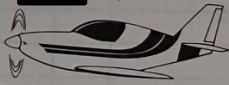
Date	Propeller TSN TSO	A/C Hrs	Description of all operations pertaining to Airworthiness Directives, Service Documents, Overhaul, Major or Minor Repair, and Inspections.
			Reg. No. - N3797W Hartzell Model HC-C3YR-1BF S/N DY6172B Date - 3/26/25 This Propeller has been inspected in accordance with a 100 Hour Inspection and determined to be in airworthy condition at this time. Complied with Inspection checklist as per Appendix D to Part 43. For AD compliance see AD listing. <i>Flight Sport Aviation, LLC</i> A&P, IA  Authorized Signature  Tach 702.8 TSN 1453.3

Figure 7: View of propeller 100 hour inspection.

5.0 Miscellaneous Information

According to the recovery personnel, about 20 to 25 gallons of fuel were drained from the left wing, inboard tank. No fuel was observed in the remaining 3 fuel tanks.

Submitted by:

Eric M. Gutierrez
Air Safety Investigator