

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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N8438B - AIRFRAME AND ENGINE EXAMINATION REPORT

September 17, 2024

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A. ACCIDENT

Location: Muncie, Indiana
Date: April 1, 2024
Time: 1027 Local Time
Airplane: N8438B, Piper PA-28-236

B. N8438B - AIRFRAME AND ENGINE EXAMINATION REPORT

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C. DETAILS OF THE EXAMINATION

1.0 Follow-up Examination

The wreckage was recovered from the accident site by Midwest Air Recovery (MAR) and it was transported to their facility in Carbondale, Illinois. The wreckage was laid out on September 17, 2024. Present during the follow-up examination work were members from the NTSB, FAA, Piper Aircraft, Lycoming Engines, and various staff members from MAR.

2.0 Airframe Examination (Piper PA-23-236)

The airplane is known as a Piper Dakota.

The wreckage was laid out, and it was documented. The airframe serial number is 23-1808.

The fuselage was destroyed when the airplane impacted terrain, including several trees. The roof of the fuselage was separated from the fuselage and fractured. The cabin door was destroyed by impact and separated from the fuselage. The lower half of the cabin door was separated from the upper half. The baggage door separated from the fuselage. The nose landing gear was impact damaged and separated from the fuselage.

The gascolator assembly was impact fractured and remained attached only by the fuel lines. The gascolator bowl was detached from the strainer and impact damaged. The strainer screen and bowl retainer bale were not located.

The electric fuel pump was impact damaged with the engine fuel supply line fitting fractured. The pump was opened, the screen was inspected with no contaminants found, and the pump was successfully tested.

The instrument panel was impact damaged. The throttle and mixture levers were in the full forward positions. The prop control lever was approximately 1/8th of an inch aft of full forward. The engine controls were continuous through the firewall where they were cut for removal and examination of the engine.

The electric fuel pump and pitot heat switches were found in the on positions.

The t-bar, yoke assemblies, and rudder bar remained intact and attached. The control cable chains separated from all three control wheel and idler sprockets. The right aileron drive control cable was observed with a broom-straw separation in the cockpit area, and approximately 79" was measured on the control cable from this separation to the wing root area where the cable passes through to the wing.

The fuel selector handle was found in the right tank position and the valve assembly remained attached to the fuselage. The fuel lines at the fuel selector valve were impact severed.

The pilot's seat was detached from the fuselage. The inboard pilot's seat rail remained attached to the fuselage. The outboard seat rail was fractured and detached from the fuselage. The pilot's lap belt remained attached to the fuselage. The lap belt latch was latched and unlatched to confirm proper operation. The seatbelt data plates indicated that the seat belts were original equipment manufactured in 1981.

One shoulder belt and inertia reel was located detached from the fuselage. The other was not located. It was not determined which shoulder belt and inertia reel was located.

The copilot's seat was impact damaged but remained attached to the seat rails and the seat rails remained attached to the fuselage. The lap belt remained attached to the fuselage with the latch operable.

The left passenger seat was impact separated from the fuselage, as were the lap belt attachments. The right passenger seat and lap belts remained attached to the fuselage.

The flap handle was in the full up position, consistent with the flap bar and chain in the flaps fully deployed position.

The pitch trim control cables separated just aft of the trim wheel with broom-straw characteristics consistent with overload from impact separations of the tail section. The pitch trim actuator was observed to be in the full nose-down position with no threads present on the top portion of the actuator.

The aileron balance cables were broom-straw separated approximately 43" inboard of the right wing root area.

The fuselage aft section separated from the main fuselage just aft of the baggage compartment. The rudder and stabilator control cables were impact or recovery separated at this area.

The horizontal stabilator counterweight was impact separated from the horizontal stabilator and remained inside the separated aft fuselage with both remaining cable sections attached.

The left wing was impact fractured and separated from the fuselage at the wing root. The inboard portion of the left flap remained attached to the fuselage hinge and control rod. The outboard portion of the left flap was separated from the inboard portion and detached from the wing. The inboard section of the wing, from the wing root to the inboard side of the fuel tank, detached from the outboard section of the wing. An approximately 36" section of the inboard wing spar including the main landing gear attachment fitting and upper strut was also separated from the wing and fuselage.

The left main landing gear lower strut assembly was separated from the upper strut assembly.

The left aileron remained attached at the hinges to the left wing outboard section. The aileron counterweight remained attached to the aileron. The aileron control rod was impact separated at the aileron rod end. The bellcrank and stops remained attached and the aileron control cables were attached to the bellcrank.

The left wing leading edge was impact damaged with two large impact depressions consistent with tree impact near the fuel tank area. The left fuel tank was impact damaged and fractured.

The left wing aileron drive cable was broom-straw separated approximately 81" outboard of the left wing root area.

The right wing was impact separated from the fuselage at the wing root. The right main landing gear assembly, except for the wheel assembly, remained attached to the wing. The wheel assembly was detached from the lower strut assembly.

The right aileron remained attached at the hinges. The control rod was separated at the aileron rod end. The bellcrank remained attached to the wing and the control cables remained attached to the bellcrank. The aileron stops were present in the wing. The right aileron counterweight remained attached to the aileron.

The right wing leading edge was impact damaged and separated from the wing.

The right fuel tank was separated from the wing and fractured

The horizontal stabilator detached from the empennage. The right outboard stabilator section leading edge was impact damaged. The left stabilator section was destroyed by impact forces that fractured and bent the control surface aft.

The vertical stabilizer was impact damaged and folded over to the right.

The rudder bellcrank was impact damaged but remained attached to the empennage with both remaining cable sections attached. The stops were present. The lower portion of the rudder was impact damaged. The rudder remained attached at the hinges.

The pitch trim actuator brackets were detached from the fuselage.

The fuel selector valve was removed and tested for proper operation by the detection of tactile detents in the left, right, and off positions, operation of the off-position safety cam, and low pressure air was passed through the valve to confirm proper operation.

The pitot head was successfully tested for heat by applying voltage to the conductors with a portable battery.

The electric fuel pump was tested by applying voltage to the conductors with a portable battery. The pump was confirmed to be operative by audible sounds of

rotation and the presence of a small amount of fuel from the fitting while the pump was operating

Flight control continuity was established for the airframe with impact and recovery separations.

There were no preimpact mechanical malfunctions or failures with the airframe that would have precluded normal operation.

The area of concern noted with the airframe were the full flaps setting found and the full nose down trim setting found.

3.0 Engine Examination (Lycoming Engines, O-540-J3A5D)

The engine serial number is L-23120-40A. The engine was partially disassembled. The case, cylinders, and accessories appeared intact.

Airframe to engine control continuity was established.

Fuel was not observed in the engine, and a fuel sample could not be obtained from the engine. No liquid was observed in any of the fuel hoses forward of the firewall.

There were no signs of a fuel leak with the engine.

The crankshaft was manually rotated using a drive tool inserted in the rear accessory drive spline and continuity of the crankshaft to the rear gears and to the valve train was confirmed. Thumb compression and suction were observed for all six cylinders.

The rocker shafts moved up and down as the camshaft rotated and the valves moved up and down with no abnormalities.

The interior of the cylinders was observed using a lighted borescope and no anomalies were noted.

The exhaust tubing assembly sustained impact damage and was removed. No obstructions were noted.

The engine driven fuel pump remained attached to the engine. The pump was removed from the engine. The pump was partially disassembled and no damage to the rubber diaphragms or internal check valves were noted. No liquid drained from the pump when it was tilted.

The carburetor remained attached to the engine and no damage was noted. The throttle cable, mixture cable and carburetor heat cable remained attached to the

carburetor throttle, mixture and carburetor heat actuator arms. The carburetor was disassembled, and no abnormalities were noted. No liquid was observed in the carburetor float bowl. The carburetor fuel inlet screen was unobstructed.

The single drive-dual magneto unit was found loose at the mounting pad, but the hardware was found secured. The magneto had sustained impact energy damage. The magneto produced spark from all ignition towers when the magneto drive assembly was rotated by hand.

The spark plug electrodes remained undamaged and exhibited gray to dark gray coloration and a worn normal condition per the Champion Aerospace Check-A-Plug Card AV-27.

The ignition harness appeared to be intact.

The alternator remained attached to the engine, and it was not removed. The starter remained attached to the engine and was not removed.

The engine was not equipped with a vacuum pump.

Oil was observed in the engine. The oil suction screen was free of visible containments.

The induction airbox and filter sustained impact damage.

The propeller governor was previously removed by MAR, and it was shipped to Hartzell Propeller for a future examination.

The engine was found equipped with various sensors for several engine performance parameters.

There were no preimpact mechanical malfunctions or failures with the engine that would have precluded normal operation.

4.0 Propeller Examination (McCauley Propeller Systems, B3D36C431/80VSA-1)

The propeller hub serial number is 982856. The propeller was previously removed by MAR, and it was shipped to McCauley Propeller Systems for future examination.

5.0 Maintenance Records Review

The airframe and engine records were reviewed. The records were documented.

The historical FAA airworthiness and registration records were retrieved and reviewed.

Submitted by:

Michael J. Hodges
Investigator-In-Charge